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COMPREHENSIVE TRANSPORTATION PLAN FOR THE CHAMPAIGN-URBANA URBAN AREA

COMPREHENSIVE TRANSPORTATION STUDY
for the
Champaign-Urbana Urban Area Transportation Study

PREPARED FOR:

The State of Illinois Department of Public Works and Buildings, Division of Highways; the County of Champaign; the City of Champaign; the City of Urbana; and the University of Illinois in cooperation with the U.S. Department of Transportation, Federal Highway Administration, Bureau of Public Roads.

PREPARED BY:

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JULY, 1970

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SUMMARY

This report summarizes transportation planning data for the Champaign-Urbana urban area and presents the analysis and recommendations for the development of a short- and long-range transportation system in the study area. The Champaign-Urbana transportation study area contains about 100,000 persons living in and near the cities of Champaign and Urbana and the University of Illinois. In addition to the cities of Champaign and Urbana and the University of Illinois, the urban area includes all or portions of Champaign, Urbana, Somer, Tolono, and Hensley Townships. The Champaign-Urbana urban area covers about 127 square miles. The study area was divided into 302 traffic analysis zones for detailed collection and analysis of data. Eleven (11) external stations at the study area cordon were utilized to interview traffic entering and leaving the study area. Three additional external stations were used in forecasting traffic.

On an average day in 1965, residents made about 335,000 daily person trips within the study area. Of this total, 65.8 percent were by automobile drivers; 31.7 percent as passengers in cars, trucks, and taxis; and 2.6 percent by transit and school bus.

1965 Internal Area Person Trips

Mode	Trips	
	Number	Percent
Auto Driver	220,000	65.8
Auto, Truck, Taxi Passenger	106,300	31.6
Transit Passenger	4,200	1.3
School Bus Passenger	4,500	1.3
Total	335,000	100.0

An evaluation of current and future land uses is essential in forecasting the 1985 traffic. The value given each land use factor used in the analysis affects both the current and future characteristics of each traffic zone. The following tabulation presents the 1965 land use areas and the corresponding 1985 anticipated land use requirements.

Generalized Land Use	1965 Acres	1985 Acres	Percent Change 1965-1985
Residential	4,482	9,862	120
Manufacturing	273	1,417	420
Transportation, Communication, & Utilities	5,400	6,321	17
Trade	352	448	27
Services	3,902	5,137	32
Cultural, Entertainment & Recreation	695	979	41
Resource Production & Extraction, and Undeveloped Land and Water Areas	66,191	57,131	-14
Total Land Use	81,295	81,295	0

The Champaign-Urbana Urban Area Transportation Study (CUATS) was designed to develop a long-range transportation plan for the area anticipated to be urbanized by 1985. Past growth trends and reasonable estimates of future growth indicate that about twice as much travel as now takes place in the Champaign-Urbana urban area will occur by 1985 and will require additional streets and highways. The following indicates pertinent data for 1965 (the base year of the study) and for 1985:

Item	YEAR 1965	YEAR 1985	Ratio 1985/1965
Population	94,236	137,200	1.45
Occupied Dwelling Units	36,987	51,220	1.39
Total Employment	39,725	69,230	1.74
Registered Vehicles	32,076	56,250	1.75
Personal Income*	$2,575	$4,085	1.59
Internal Vehicle Trips	253,853	439,659	1.73
Daily Vehicle Miles of Travel	697,000	1,795,000	2.57

---

*Income is expressed in 1957-1959 dollars.

Less than 2 percent of the person trips each day are made by transit passengers, and transit use in the Champaign-Urbana area has tended to decline over the past several years. Anticipated 1985 transit use indicates the role of public transportation to be one of a public service. A policy decision by the local governments must be made on the role of the transit service in the area. If the policy decision is to continue transit service, it should be recognized that it will be a public service and will require financial support (subsidy) in addition to direct revenue that users can pay.

By 1985 there will be almost one and a half as many people and about one and three-quarters as many vehicle trips within the area. A comparison of these and certain other data indicates that there will be more trips being made by each person and about the same number of trips per auto with an increase in total daily travel per vehicle. These relationships are illustrated below:

Item	1965	1985	Ratio 1985/1965
Internal Vehicle Trips Per Person	2.69	3.20	1.18
Internal Trips Per Vehicle	7.92	7.81	0.98
Daily Travel Per Vehicle (in Miles)	21.80	31.92	1.46
Internal Vehicle Trips Per Dwelling Unit	6.86	8.59	1.25

The number of trips made within the Champaign-Urbana urban area by residents of the area constitutes the major portion of all travel within the area. Other trips include those made between the area and external areas and those trips traveling through the area. The following indicates the number of trips by these three basic trip categories. Note that through trips constitute a very small proportion (2 to 4 percent) of the total trips.

Trip Type	1965	% of Total	1985	% of Total
Internal-Internal	253,853	87	439,659	81
Internal-External	32,203	11	78,713	15
Through	5,107	2	20,807	4
TOTAL	291,163	100	539,179	100

The following tabulation presents the 1965 and 1985 internal trips categorized by trip purpose:

Trip Purpose	1965	1985	Ratio 1985/1965
Home-Based Work	32,506	58,897	1.81
Home-Based Shop	29,244	53,663	1.84
Home-Based Other	97,925	175,618	1.80
Non-Home Based	64,267	106,640	1.66
Truck	29,911	44,841	1.50
Total Internal Trips	253,853	439,659	1.73

The existing major street and highway system has areas of capacity deficiencies. The area contains many major streets with narrow pavement widths and right-of-way widths. A systematic and extensive improvement program will be necessary to provide the major street system required to adequately serve the growing urban area population.

A plan based on the total desires of each community (The Recommended Plan) and a high level of service is beyond the fiscal capabilities of the study area. This report, however, presents a desirable transportation plan and delineates a financially attainable program for street and highway improvements commensurate with the financial capabilities of each jurisdiction in the study area.

Listed below is a summary of the mileage of existing facilities by type and the facilities proposed to accommodate the estimated 1985 travel demands within the financial capability of the area to provide major streets and highways:

Facility Type	1965	% of Total	1985	% of Total
Freeway-Expressway	21	13	32	12
Arterial Streets and Highways	64	41	189	72
Collector Streets and Highways	71	46	41	16
TOTAL	156	100	262	100

The financially attainable program requires the expenditure of approximately $32.7 million. This cost figure does not include any parking improvements. This cost averages about $14 per person per year in the study area and is a reasonable level of expenditure for the service provided. This will be financed by federal, state, and local governmental agencies.

The plan recommendations in this report include a segment-by-segment listing of cross section and right-of-way requirements for each facility along with the estimated cost to provide these improvements. In addition to the committed projects at the present time, the following is a listing of the major routes in the area that will require improvement within the planning period to meet the traffic service needs.

East-West Facilities:

1. Bradley Avenue
2. Main Street to Park Street connection
3. Springfield Avenue-Water Street-Main Street
4. Illinois Street
5. Washington Street
6. Kirby Avenue
7. Florida Avenue
8. Devonshire Drive
9. Windsor Road

North-South Facilities:

1. Staley Road
2. Duncan Road
3. Mattis Avenue
4. Russell Street
5. Prospect Avenue
6. Neil Street

7. Chestnut Street-Walnut Street one-way couple

8. Goodwin Avenue

9. Broadway Avenue North

10. Illinois Route 130

The financially attainable program, presented in this report, is designed to be implemented in two stages in a manner which is compatible with the financial structure under which the transportation system must be built. Following is a summary of development costs:

	PLAN NEEDS (1965–1985)			
Jurisdiction	Committed Improvements	Priority I 1970–1975	Priority II 1976–1985	Total Needs
State of Illinois	$2,704,000	$ 3,139,000	$ 2,530,000	$ 8,373,000
Champaign County	--	1,989,000	2,936,000	4,925,000
Champaign City and Township	4,885,000	2,462,000	3,372,000	10,719,000
Urbana City and Township	931,000	2,194,000	3,266,000	6,391,000
University of Illinois	--	1,553,000	695,000	2,248,000
Hensley, Somer, and Tolono Townships	--	--	--	--
TOTAL	$8,520,000	$11,337,000	$12,799,000	$32,656,000

Parking supply in the central area of Urbana for 1967 and 1985 is adequate and generally indicates a surplus over demand. Although the Champaign Central Business District and the University of Illinois show a parking surplus over existing demand for their respective parking areas as a whole, the core areas are deficient. The 1985 forecasted demand is substantially in excess of supply in the Champaign Central Business District and the University of Illinois area. The following tabulation presents the total existing (1967) parking space supply and demand and the 1985 anticipated parking demand:

Area	1967 Spaces Available	1965 Demand	1985 Demand	1985 Space Defficiency or (Surplus)
Urbana CBD	2,461	1,103	1,692	(769)
University of Illinois	16,019	12,100	29,652*	13,633*
Champaign CBD	3,268	1,786	3,545	673

---

*Future parking demand and resulting deficiencies in the University area would depend upon adopted University regulations regarding student parking at that time.

The recommended transportation plan should be carried on as a normal and continuing function of the community. An organizational objective is to create a process for the systematic collection, analyses, and utilization of the information needed in developing a sound transportation plan and program. Only then will the Champaign-Urbana urban area be capable of noting and evaluating deviation from expected and projected courses and directions of growth and change and of modifying the recommended transportation plan and the implementation program.

CHAPTER I

INTRODUCTION

The Champaign-Urbana study area is basically a three-center, urban complex involving the City of Champaign, the City of Urbana, and the University of Illinois. Champaign-Urbana is the largest metropolitan area within approximately a 75-mile radius and is well situated with respect to major transportation facilities. The area is fortunate in being at the crossing of two existing interstate highways (I-57 and I-74) and another planned interstate route to facilitate through traffic movements and to reduce travel time between it and other major cities within the state of Illinois and the surrounding region.

The Champaign-Urbana area is a thriving educational center in the state of Illinois. In 1960, the Champaign-Urbana area had a higher per family income than the state of Illinois as a whole. Champaign County is part of the extremely rich agricultural area in central Illinois; and Champaign-Urbana serves as a retail trade center, transportation center, and food processing center for the surrounding agricultural region. Although the University of Illinois is the greatest single employer and generator of population growth, Champaign-Urbana's economy is diversified.

The efficiency of the transportation system of a community determines to a large degree its economic well-being. Unless the movement of persons and commodities can be accomplished with efficiency, safety, and convenience, the economic growth of an urban area can be seriously impaired or even retarded. To provide guidance in the development of the transportation facilities for the Champaign-Urbana urban area, the City of Champaign, the City of Urbana, the University of Illinois, Champaign County, and the Illinois Department of Public Works and Buildings, Division of Highways, agreed to cooperate in the development of a comprehensive transportation plan for the Champaign-Urbana area.

The Illinois Division of Highways accepted the responsibility for the development of the long-range transportation plan for the design year 1985. The Illinois Division of Highways then entered into an agreement with Harland Bartholomew and Associates to assist in the preparation of the transportation plan. The preparation of the 1985 transportation plan also required the cooperative efforts of local citizens and local, state, and federal agencies. Certain data reported herein were prepared by each of the cooperating agencies and organizations, and appropriate sources are noted on the tables and in the text.

A comprehensive origin-destination survey was conducted by the Illinois Division of Highways to determine existing travel patterns within the area. With the inventory of existing economic, population, land use, and major street conditions, it formed the basis for the development of mathematical models used in the prediction of future travel desires. In conjunction with the vehicle travel desire studies, an analysis was made of transit passenger desires and the role of transit within the study area.

The design year vehicle travel desires were compared with the existing major street system to permit an analysis of capacity deficiencies. These data, evaluations of opportunities for improvements, and a consideration of area goals and objectives permitted investigation of alternate plans which led to the development of the recommended transportation plan. Following the development of the plan, a program was developed for implementing the plan. Another important phase of the long-range planning program was the establishment of a continuing transportation planning process.

Throughout the course of the transportation study, a number of meetings and conferences were held to acquaint representatives of local, state, and federal agencies with the study procedures and results. These meetings included public presentations and invitations to the public and other agencies to provide input for analysis during the development of the plan.

The data summarized in this report are supplemented by Interim Reports A through L and other work documents. The interim reports document the technical details and the background data for the various phases involved in the development of the transportation plan. Separate project work files include evaluations, computer printouts, and work maps.

THE PLANNING APPROACH

Any urbanized society depends upon a good transportation system to meet the needs of its populace in the efficient and economical movement of goods and persons. All modes of transportation must be adequate; however, for most American cities in the general population category containing the Champaign-Urbana urban area, the predominant mode of travel is street- and highway-oriented. This condition is likely to continue for many years. It is mandatory that such a system be adequate not only for present needs but also to meet the anticipated future requirements. Past experience has shown that in major street planning a design year of about 20 to 25 years in the future is perhaps the most desirable. The Champaign-Urbana study was begun in 1965 and uses a design year of 1985. Intermediate checks should be made every 5 to 10 years depending upon the rate of growth of the urban area in question. This process enables the programming of improvements commensurate with demand. Consideration of needs beyond the design year is necessary to insure adequate and logical long-range planning.

One purpose of planning is to allow for provisions to be made for street and highway improvements so that when future needs arise the opportunity for improvement exists. This makes mandatory the preobtainment of rights-of-way properly located to allow the street and highway improvements which will ultimately be required. Planning enables the designation of minor streets with resulting savings where wide rights-of-way and pavement widths are not required. Public officials should have early knowledge of planned street types and locations. This permits the proper location of public facilities in relation to future streets and highways. Private developers also must know the future location of streets and highways in order to design subdivisions (both residential and commercial) that will function as a part of the overall plan. This results in a very real economic benefit not only to the developer but also to the purchaser.

Where a major street plan does not exist, streets become major by use as determined by the public in meeting their immediate desires. This is the antithesis of an orderly development which would provide both safety and long-range economy. Quite often, numerous streets are developed as major streets by use rather than the desirable development of relatively few streets to adequately accommodate major traffic volumes.

The acceptance and following of a major street plan enhances the planned advancement of any urban area. It enables the public to know which streets will be developed as major and which will be protected from high traffic volumes and speeds. This knowledge provides a desirable stability to neighborhoods and a "peace of mind" for individuals residing therein. A workable and enforced major street plan insures that future growth will be made without unduly burdening the general public with future street improvements.

Obviously, a transportation plan is an integral part of the comprehensive development plan of any urban area. As such, the plan should:

1. Accommodate a majority of traffic movements on relatively few well-improved facilities

2. Utilize to the maximum extent practicable the existing street and highway system

3. Be compatible with other elements of the comprehensive plan for the area and provide the best possible place for people to live, work, and play

4. Provide the most economical system to meet the travel desires for the design year with proper consideration for future expansion

5. Provide a balanced transportation system with the automobile providing the major transportation service and transit (bus) providing a public service for

those who are too old to drive, too young to drive, or too poor to afford a car.

The determination of the precise dimensions for specific elements of the transportation system improvements will be a function of preliminary engineering and design. However, this comprehensive, long-range transportation planning study has given consideration to desirable roadway geometrics and design standards and to the practical feasibility of proposed improvements for each route. Such consideration should be given to roadway standards at the planning stage in order to provide an implementable plan--one that will be compatible with desirable standards based on the results of the latest investigations into the safety and adequacy of highway systems.

TRANSPORTATION STUDY PHASES

In order to develop a long-range transportation plan and thus inaugurate a continuing comprehensive transportation planning process for the Champaign-Urbana urban area, a comprehensive transportation planning study was programmed and undertaken. Most comprehensive transportation planning studies as currently conducted for urban areas in the United States follow a somewhat similar overall work process leading from inventories to forecasts to analysis of needs to the development of the plan.

For the purposes of this report and to illustrate the general relationships of the major events in the study, four phases have been designated for the Champaign-Urbana Urban Area Transportation Study. These four phases are illustrated on Plate I-1, which also depicts major events in each of the study phases. The following paragraphs provide a general description of the study process, and following chapters in this report present additional details of the Champaign-Urbana Urban Area Transportation Study.

The inventory phase of the study involved a determination of not only existing physical facilities to serve transportation in the urban area but also a number of other important items relating to transportation. A comprehensive origin-destination survey was conducted in 1965 to determine existing travel patterns within the area. In conjunction with the origin-destination survey, the inventory of existing economic, population, land use, and major street and highway conditions formed the basis for the development of mathematical models used in the prediction of future travel desires.

Phase two involved the analytical process of developing mathematical traffic models as well as forecasting a series of data necessary for the transportation study. These general items are illustrated on Plate I-1 and include population, land use, and socio-economic factors which were interrelated utilizing the mathematical models in order to determine a realistic estimate of future travel desires. In conjunction with the determination of vehicle

MAJOR EVENTS IN TRANSPORTATION STUDY PHASES

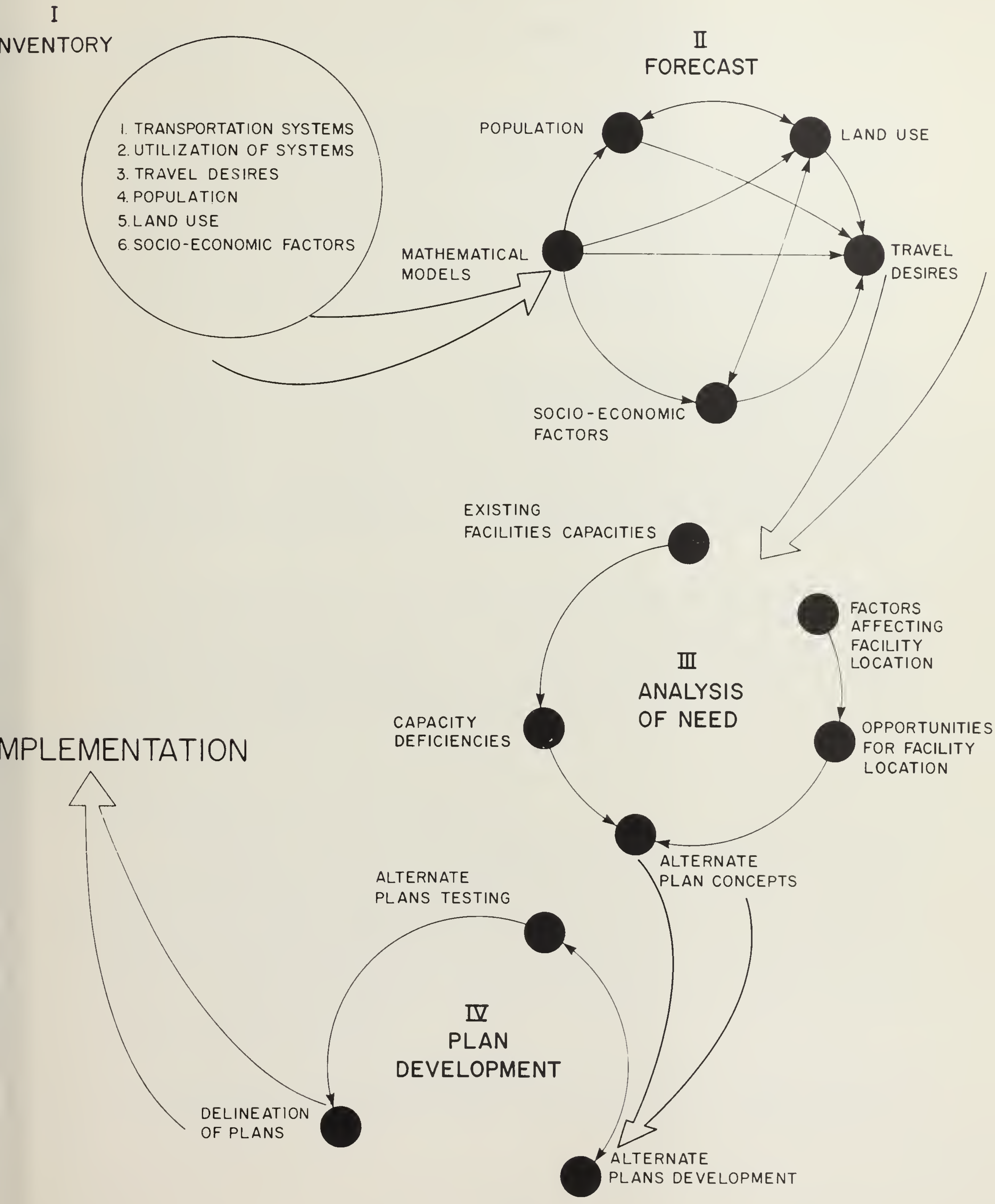


PLATE I-1

HARLAND BARTHOLOMEW AND ASSOCIATES
PLANNING ENGINEERING LANDSCAPE ARCHITECTURE URBAN RENEWAL
MEMPHIS TENNESSEE

travel desires, an analysis was made of transit passenger desires and the role of transit within the study area.

The third phase of the transportation study involved an analysis of needs. The design year vehicle travel desires were compared with the existing major street and highway system to permit an analysis of future capacity deficiencies. In addition, evaluations of factors affecting facility locations and various opportunities for facility locations as well as a statement of the goals and objectives of the area led to the development of a series of alternate plans. These alternate plans were developed in sufficient detail to indicate the level of need and the approximate level of cost to satisfy that need for transportation facilities. These items permitted the development of the transportation plan in a knowledgeable manner to result in a realistic and financially feasible transportation plan for the study area.

The plan development phase included the development of an initial test plan, a minimum plan, several alternate plan treatments, and testing of alternate plans. This phase was culminated in the development of a recommended transportation plan, a financially feasible program, and a rather detailed delineation of the first five-year (1970-1975) improvements. The development of the initial test plan was made subsequent to the analysis of several plan concepts and related relative costs as well as existing capacity deficiencies. The comparison of plan concept costs to future revenues indicated the need for the initial development of a minimum cost plan to serve the travel and land service needs in the area.

A more desirable plan was also developed and designated the recommended plan. This was an adjustment of the minimum plan through incorporating alternate treatments tested. This phase also involved the determination of parking deficiencies and the delineation of possible areas for the construction of new parking facilities in the Champaign Central Business District (CBD), the Urbana CBD, and the University of Illinois campus. Guidelines for a continuing transportation planning process were also suggested.

REQUIREMENTS FOR STREET LOCATION

In the simplest form, a traffic service demand exists wherever a driver desires to travel. However, this demand cannot be considered a traffic service requirement until there are enough individual desires grouped together to warrant construction of a street. It is obvious that a third or a half of a traffic lane cannot be built. On the other hand, it might become more economical to construct the entire street cross section rather than just a portion of it. For the purposes of this report, a full traffic service requirement is defined as enough grouped demands in the design period to warrant construction of the complete cross section recommended for a given street.

If a street is not required by traffic service, it may be required by land service. This means that there will not be enough traffic to warrant the full cross section development;

however, right-of-way should be provided to enable future widenings. Therefore, if a street exists at a width less than the proposed width, it may not require overall widening by the design year under a land service requirement.

Any adequate major street plan should give consideration to potential development beyond the design year. Interested persons should know where eventual improvements will be effected. By understanding the plan and realizing where and approximately when widenings will occur or where new streets will be located, planning can take place to minimize damage to property values and to enhance the appearance of an urban area. This plan for the Champaign-Urbana urban area will provide the opportunity to meet future requirements with a minimum of expenditure not only of money but also of those intangible community values associated with the Champaign-Urbana area.

LEVELS OF STREET SERVICE

Streets and highways are intended to provide two basic functions--traffic service and land service for people. Traffic service generally relates to accommodating vehicles during the portion of their trips between termini while land service relates to providing ingress and egress to abutting land uses. As traffic desire movements across and within an area increase, the proportion of demand related to traffic service as a general rule increases; and, where very high traffic volumes result, certain streets and highways can be provided for pure traffic service. However, the majority of the mileage of streets and highways must accommodate both a traffic service and a land service demand.

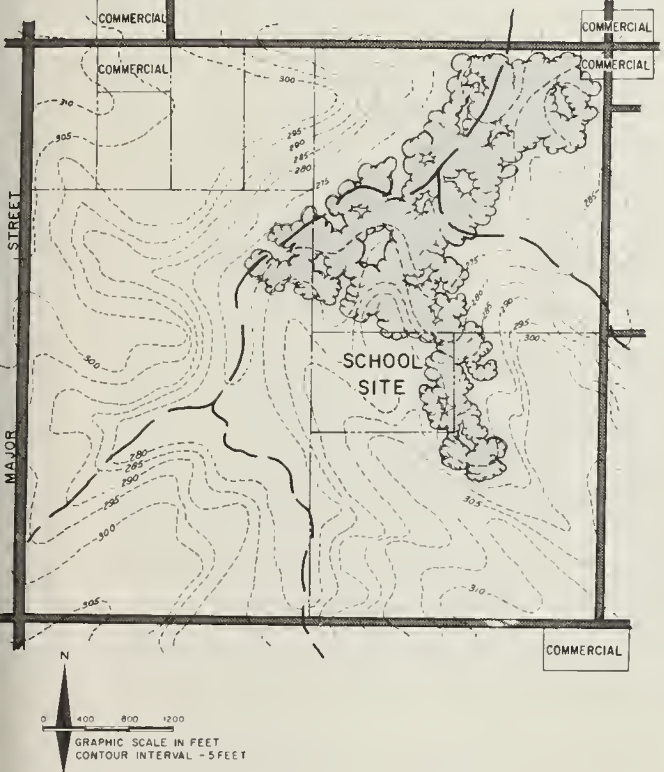
Traffic movements within an area can best be accommodated by developing streets for varying levels of service. Relatively few streets need to be developed with wide pavement widths and generally straight alignment to serve as major facilities. Such major streets in the Champaign-Urbana area should accommodate about 80 percent of the urban area's traffic on a coordinated system involving only about 20 percent of the total street mileage.

The spacing of designated major streets must be convenient as well as adequate in capacity for the demands of the motoring public. Under typical present-day conditions in most residential suburban developments with relatively level topography, the motoring public should not have to travel more than about one-half mile to reach a major street or highway. Thus, major streets might be spaced at approximately one-mile intervals in such areas. Plate I-2 illustrates a typical layout for a square mile of suburban development under such conditions. Streets are shown on Plate I-2 for a number of levels of traffic service, but the basic major streets are spaced about one mile apart.

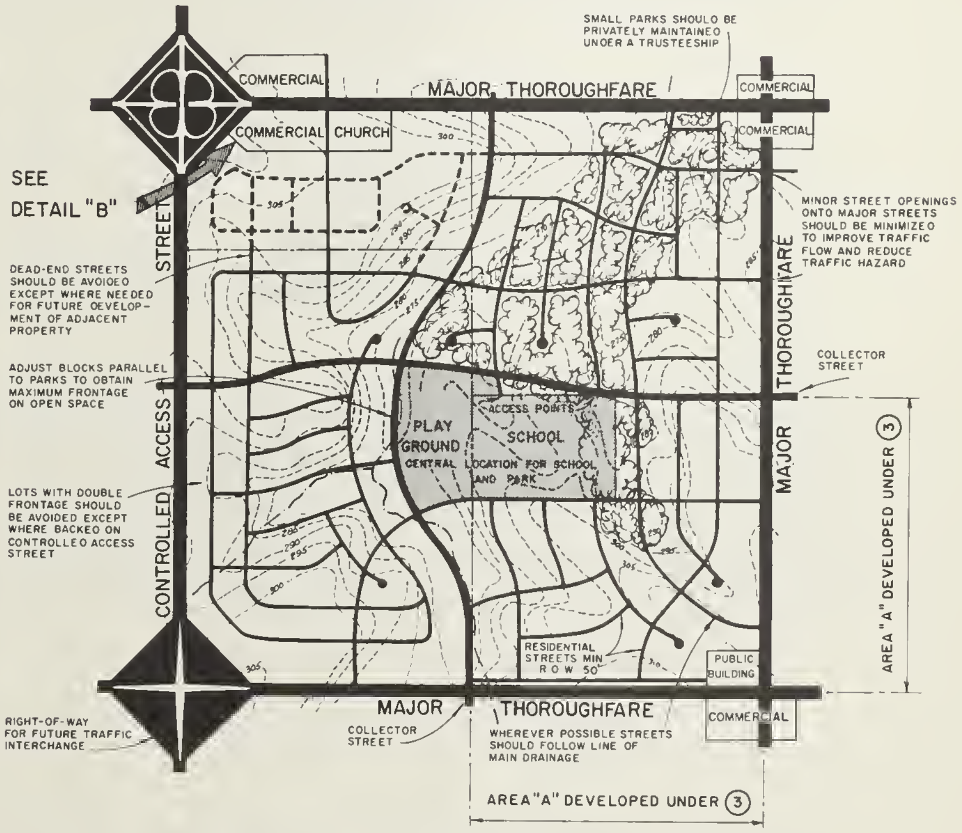
With only a few streets designed for high traffic volumes and a high proportion of traffic service, the remaining streets can be improved with a narrower, less expensive pavement and right-of-way. These streets constitute the majority of the mileage and should

PRINCIPLES OF LAND SUBDIVISION

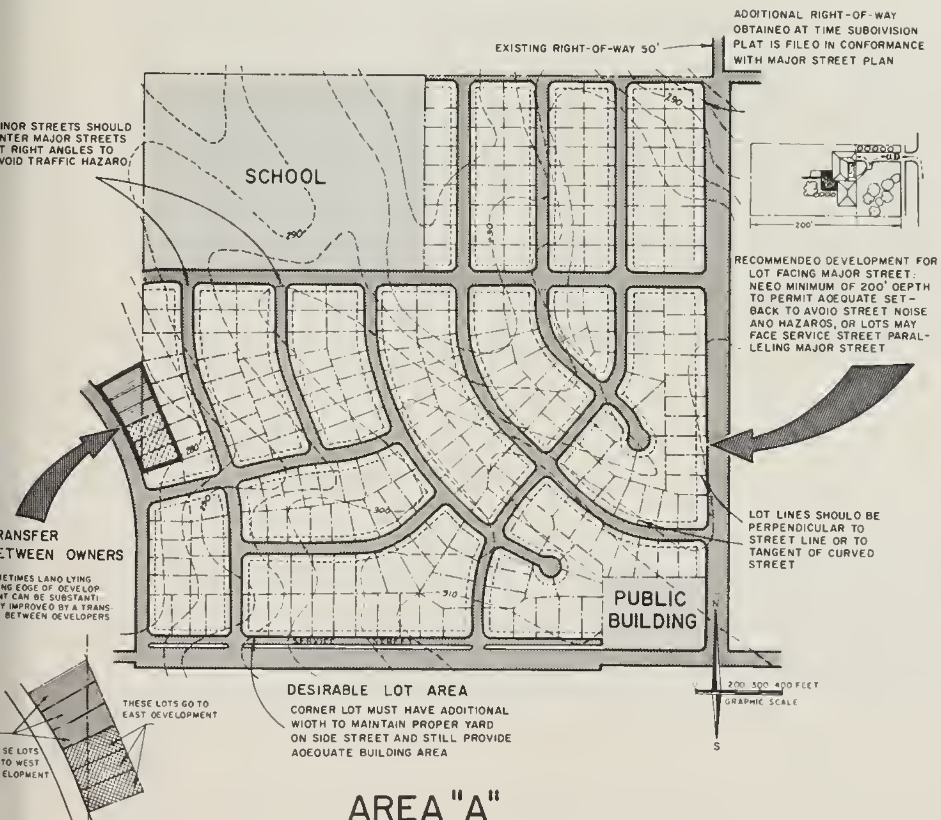
① EXISTING CONDITIONS



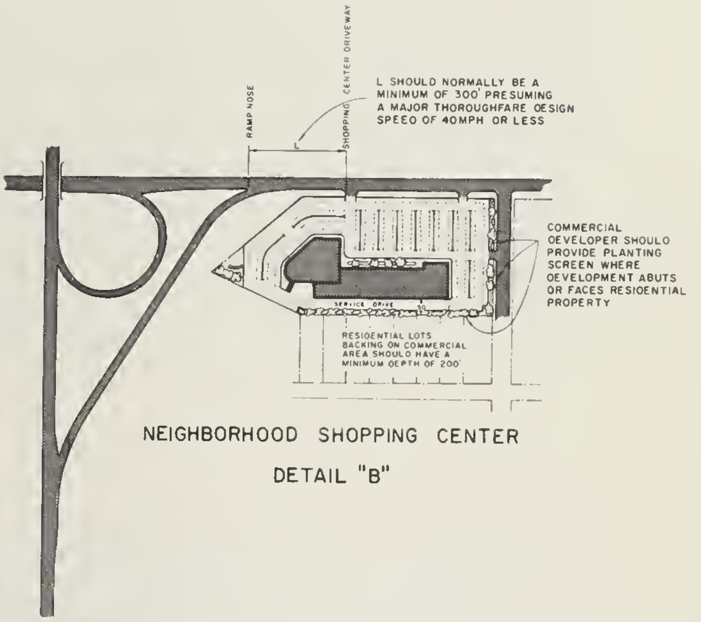
② LAND DEVELOPED AS A NEIGHBORHOOD UNIT


COMMERCIAL
COMMERCIAL
CHURCH
MAJOR THOROUGHFARE
COMMERCIAL
COMMERCIAL
SMALL PARKS SHOULD BE PRIVATELY MAINTAINED UNDER A TRUSTEESHIP
SEE DETAIL "B"
CONTROLLED ACCESS STREET
DEAD-END STREETS SHOULD BE AVOIDED EXCEPT WHERE NEEDED FOR FUTURE DEVELOPMENT OF ADJACENT PROPERTY
ADJUST BLOCKS PARALLEL TO PARKS TO OBTAIN MAXIMUM FRONTAGE ON OPEN SPACE
LOTS WITH DOUBLE FRONTAGE SHOULD BE AVOIDED EXCEPT WHERE BACKED ON CONTROLLED ACCESS STREET
MINOR STREET OPENINGS ONTO MAJOR STREETS SHOULD BE MINIMIZED TO IMPROVE TRAFFIC FLOW AND REDUCE TRAFFIC HAZARD
MAJOR THOROUGHFARE
COLLECTOR STREET
PLAY GROUND
ACCESS POINTS
SCHOOL
CENTRAL LOCATION FOR SCHOOL AND PARK
AREA "A" DEVELOPED UNDER ③
RESIDENTIAL STREETS MIN ROW 50'
PUBLIC BUILDING
COMMERCIAL
MAJOR THOROUGHFARE
RIGHT-OF-WAY FOR FUTURE TRAFFIC INTERCHANGE
COLLECTOR STREET
WHEREVER POSSIBLE STREETS SHOULD FOLLOW LINE OF MAIN DRAINAGE
AREA "A" DEVELOPED UNDER ③

③ TYPICAL SUBDIVISION


EXISTING RIGHT-OF-WAY 50'
ADDITIONAL RIGHT-OF-WAY OBTAINED AT TIME SUBDIVISION PLAT IS FILED IN CONFORMANCE WITH MAJOR STREET PLAN
INOR STREETS SHOULD NTER MAJOR STREETS T RIGHT ANGLES TO VOID TRAFFIC HAZARD
SCHOOL
200'
RECOMMENDED DEVELOPMENT FOR LOT FACING MAJOR STREET: NEED MINIMUM OF 200' DEPTH TO PERMIT ADEQUATE SET-BACK TO AVOID STREET NOISE AND HAZARDS, OR LOTS MAY FACE SERVICE STREET PARALLELING MAJOR STREET
RANSFER ETWEEN OWNERS
IETIMES LAND LYING NG EDGE OF DEVELOP NT CAN BE SUBSTANTI Y IMPROVED BY A TRANS- BETWEEN DEVELOPERS
LOT LINES SHOULD BE PERPENDICULAR TO STREET LINE OR TO TANGENT OF CURVED STREET
PUBLIC BUILDING
THESE LOTS GO TO EAST DEVELOPMENT
SE LOTS TO WEST ELOPMENT
DESIRABLE LOT AREA
CORNER LOT MUST HAVE ADDITIONAL WIDTH TO MAINTAIN PROPER YARD ON SIDE STREET AND STILL PROVIDE ADEQUATE BUILDING AREA
N
S
0 200 300 400 FEET
GRAPHIC SCALE
290
300
310

AREA "A"


RAMP NOSE
SHOPPING CENTER DRIVEWAY
L
L SHOULD NORMALLY BE A MINIMUM OF 300' PRESUMING A MAJOR THOROUGHFARE DESIGN SPEED OF 40MPH OR LESS
SERVICE DRIVE
COMMERCIAL DEVELOPER SHOULD PROVIDE PLANTING SCREEN WHERE DEVELOPMENT ABUTS OR FACES RESIDENTIAL PROPERTY
RESIDENTIAL LOTS BACKING ON COMMERCIAL AREA SHOULD HAVE A MINIMUM DEPTH OF 200'

NEIGHBORHOOD SHOPPING CENTER

DETAIL "B"

PLATE I-2

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PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE, URBAN RENEWAL
MEMPHIS, TENNESSEE

be coordinated with the major street and highway network. They are referred to as minor streets. The primary function of minor streets is land service; they need not have direct alignments. By developing a coordinated system of major and minor streets, greater safety is provided, traffic is accommodated better, and community values are both protected and enhanced.

The quality of motor vehicle service provided in a community is sometimes measured by the overall level of service provided by the major street and highway network. The level of service required depends upon such items as the desires and needs of the people for motor vehicular travel and for transit travel, economic factors related to the development of transportation systems, and overall planning objectives for the area.

The division of street mileage for various systems or classes of streets varies from location to location. The classifications of types of streets generally are based on definitions used in studies throughout the country. The following paragraphs briefly describe the types of facilities and nomenclature for these classifications selected for use in the Champaign-Urbana Urban Area Transportation Study. These definitions were provided by the Illinois Division of Highways and are contained in the "Street Inventory and Classification Instruction Manual."

Freeway

A freeway is a full access controlled, divided facility serving high traffic volumes and providing for movement at relatively high speeds. They generally serve trip lengths in excess of three miles due to their general usage to save trip time. Wide traffic lanes with wide medians and no cross traffic are used to maintain high safety rates at speeds of 60-70 mph in rural areas, with somewhat reduced speeds in urban areas, due to higher volumes. All cross roads are either grade separated, closed, or relocated so there are no traffic signals on the freeway. Entrance to and departure from the freeway is provided by interchange ramps, and no cross traffic or left turns are permitted. Where necessary, access to abutting land uses is made possible by frontage roads on which parking is permitted. Parking is not permitted on freeways. The design of this frontage road is dependent upon the volumes served. A freeway is generally designated as a State and/or "U.S. marked" route.

Expressways

An expressway is a partially access controlled, divided facility serving high traffic volumes at moderate to high speeds for trip lengths generally in excess of three miles. This facility is differentiated from freeways in that it is generally built on less right-of-way, and some at-grade intersections with major streets and highways are permitted. This lowers the level of service of this facility, and capacities are reduced. Although some access to private property is permitted, abutting property is generally served by frontage roads. Parking is not permitted on the expressway except in emergency but can be accommodated on the frontage roads. An expressway is generally designated as a State or "U.S. marked" route and designed for 50-70 mph traffic.

Major Streets

A major street is a high type urban facility which should provide continuous service through the urban area. It has intersections at grade and generally provides direct access to abutting property. However, geometric design and traffic control measures are used to provide safe movement of through traffic by control of entrances, exits, parking, etc. As such, the major street may include such design characteristics as medians, turning lanes, channelization of intersections, etc. In some cases, access may be denied to abutting property in order to provide proper design characteristics for high volume traffic. Parking lanes may be included as needed but should be discouraged. Major intersections are signalized, and other cross traffic is controlled by stop signs.

Major streets should form neighborhood boundaries and be generally spaced at one-half (1/2) to 2-mile intervals. Trip lengths on the facility generally average over one mile at speeds of 30-40 mph.

Collector Streets

A collector street is designed for medium to low volumes of traffic being collected and distributed between major and local streets. It also serves secondary traffic generators such as schools, small shopping centers, churches, and hospitals. As such, collector streets are the main interior streets within a neighborhood, spaced one-quarter (1/4) to three-quarters (3/4) of a mile. Furthermore, they should principally serve traffic destined or originating within the particular neighborhood served and discourage through traffic. Direct access is provided to all abutting property; parking lanes are provided as required; and all cross streets of a local nature have stop signs. The facility is generally designed for 20-30 mph traffic.

Local Streets

Local streets primarily provide access to abutting property such as residences, industrial areas, or commercial uses. They collect individual trips for delivery to a higher type facility such as collectors or major streets. Volumes are low, and design speeds are set at 20-30 mph.

Local streets are spaced at each block with the exception of those blocks where a higher type facility exists. Through traffic is discouraged by frequent stop or yield signs, and provision is made for occasional parking.

This classification of streets makes up a majority of the total street mileage in the city but due to its nature carries only a small volume of traffic on each facility.

Major Highways

A major highway is a high type rural facility handling high traffic volumes at medium to high speeds. They usually are main roadways connecting cities and towns where volumes do not justify construction of a freeway or expressway. Geometric requirements for a major highway give access to abutting property, have intersections at grade, etc., but primarily are designed for the safe movement of the high speed through traffic. Accordingly, in some cases, control must be exerted over access to the facility to maintain high traffic volumes.

Major highways generally are designated as "U.S. marked," State, or County routes or some combination of these. Speeds of 50-70 mph can be maintained on these facilities.

Collector Highways

A collector highway is designed for moderate volumes of rural traffic and extends for some distance collecting and distributing rural traffic between major and local highways. All abutting property has direct access, and all intersections are at grade. The collector highway traffic has priority and is protected by stop signs, except at intersections with a highway of higher classification.

Collector highways generally are designated as County or State highways with a design speed of 50-60 mph.

Local Highways and Roads

Local highways and roads serve low volumes of rural traffic, providing access to all abutting property. All intersections are at grade, and design speeds are in the range of 30-50 mph.

Local highways and roads make up the majority of the rural network due to their nature of providing access to all farmsteads but naturally carry a minority of the traffic volumes. These highways are generally maintained by the County or Township.

CHAPTER II

INVENTORY OF EXISTING CONDITIONS

This chapter presents the inventory of existing conditions in the Champaign-Urbana area. The inventoried items include the economic factors affecting development, population, land uses, transportation facilities and functional classification, social and community values, public transportation, financial resources, laws and ordinances, terminal and transfer facilities, and origin-destination survey. It also presents the mathematical traffic model development. Additional details on items discussed in this chapter are presented in Interim Report A, Base Maps; Interim Report B, Economic, Population, and Land Use Inventory; Interim Report D, Transportation Facilities Inventory; Interim Report F, Laws and Ordinances; Interim Report G, Origin-Destination Studies; Interim Report J, Terminal and Transfer Facilities Inventory and Forecast; and Interim Report K, Inventories and Forecast of Financial Resources.

The cities of Champaign and Urbana are nearly centrally located within a triangle formed by three major industrial centers in the United States. These are Chicago, St. Louis, and Indianapolis. Each of these major industrial centers is approximately one hundred and fifty (150) miles from Champaign-Urbana. The Champaign-Urbana urban area is also located in one of the most productive agricultural regions of the world. The geographic location of the Champaign-Urbana urban area is shown on Plate II-1, Geographic Location. The Champaign-Urbana urban area is served by two interstate highways (I-57 and I-74), two major U.S. highways (U.S. 45 and U.S. 150), and two State highways (Illinois 10 and Illinois 130) which make it accessible from all directions. It is also served by four railroads--Illinois Central, New York Central (Penn Central), Wabash (Norfolk and Western), and Illinois Terminal--intracity and intercity bus lines, and Ozark Air Lines.

ANALYSIS AREA

The cities of Champaign and Urbana and the surrounding areas expected to be urbanized by 1985 are within the Champaign-Urbana Urban Area Transportation Study. Included in the study area are Champaign, Urbana, and the suburban area within about four miles of Champaign and Urbana. Plate II-1 shows the general location of the 127 square mile study area. A more detailed delineation of the study area is given on Plate II-2, Traffic

Analysis Zones. The study area was divided into 302 traffic analysis zones for detailed collection and analysis of data. One screenline following the Illinois Central Railroad was established within the study area for checking the completeness of the origin-destination survey trip reporting. The internal traffic analysis zones and the external station locations are shown on Plate II-2.

ECONOMIC FACTORS AFFECTING DEVELOPMENT

The study area's economy is stable and is getting to be relatively more diversified. It has a small manufacturing base for an area of its size (100,000 population). This is caused primarily by the specialization of the area in education. Champaign-Urbana is the home of the University of Illinois.

The study area is not rich in mineral resources. Champaign County is part of the extremely rich agricultural area in Central Illinois, and Champaign-Urbana serves as the focal point for the surrounding agrarian region.

Income is an excellent indicator of the economy of an area. In 1960, the Champaign-Urbana area had a higher per family income than the state of Illinois as a whole. Per capita income increased from $1,838 in 1950 to $2,607 in 1963, a 42 percent increase. In general, the per capita income has been increasing (after allowing for inflation), indicating a strong and growing local economy.

Employment is another good indicator of the economy of an area and is of primary effect on trip generation. Table II-1 presents a summary of the 1963 employment in the Champaign-Urbana study area. In 1963, the total employment in the study area was 39,725. Persons living within the study area accounted for 31,975 (80.6 percent), and nonresidents accounted for 7,750 (19.4 percent). Services employment (education and other) comprised 73.6 percent of the total resident employment, or 23,560. The total services employment includes all employment other than trade and manufacturing employment. The other high categories in numerical order include trade (17.8 percent) and manufacturing (8.6 percent). Existing economic data were assembled for the study area by traffic analysis zone for input to the trip generation analysis.(1)

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(1) See additional details in Interim Report B, Economic, Population and Land Use Inventory, Harland Bartholomew and Associates, June, 1967.

GEOGRAPHIC LOCATION - 1965

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

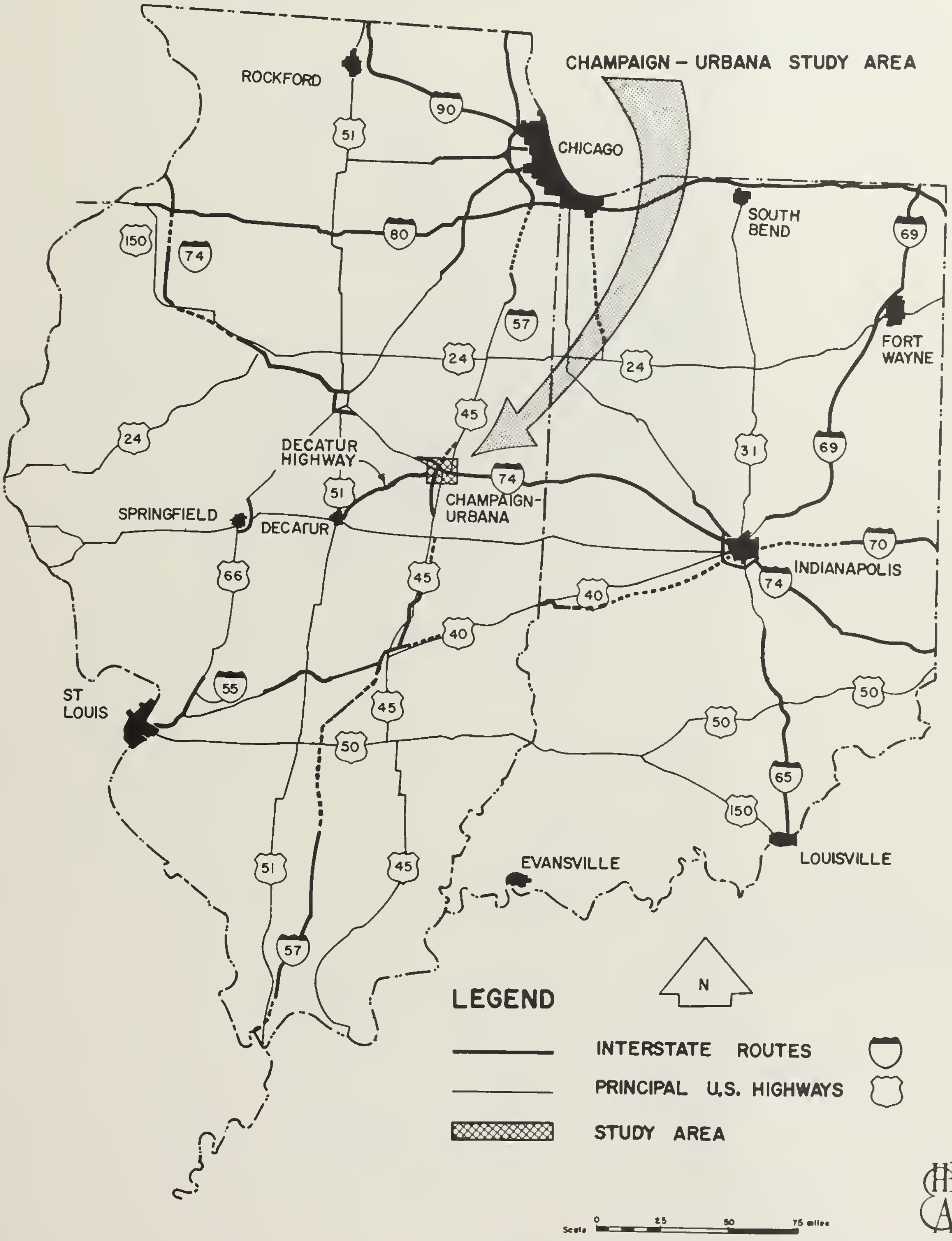
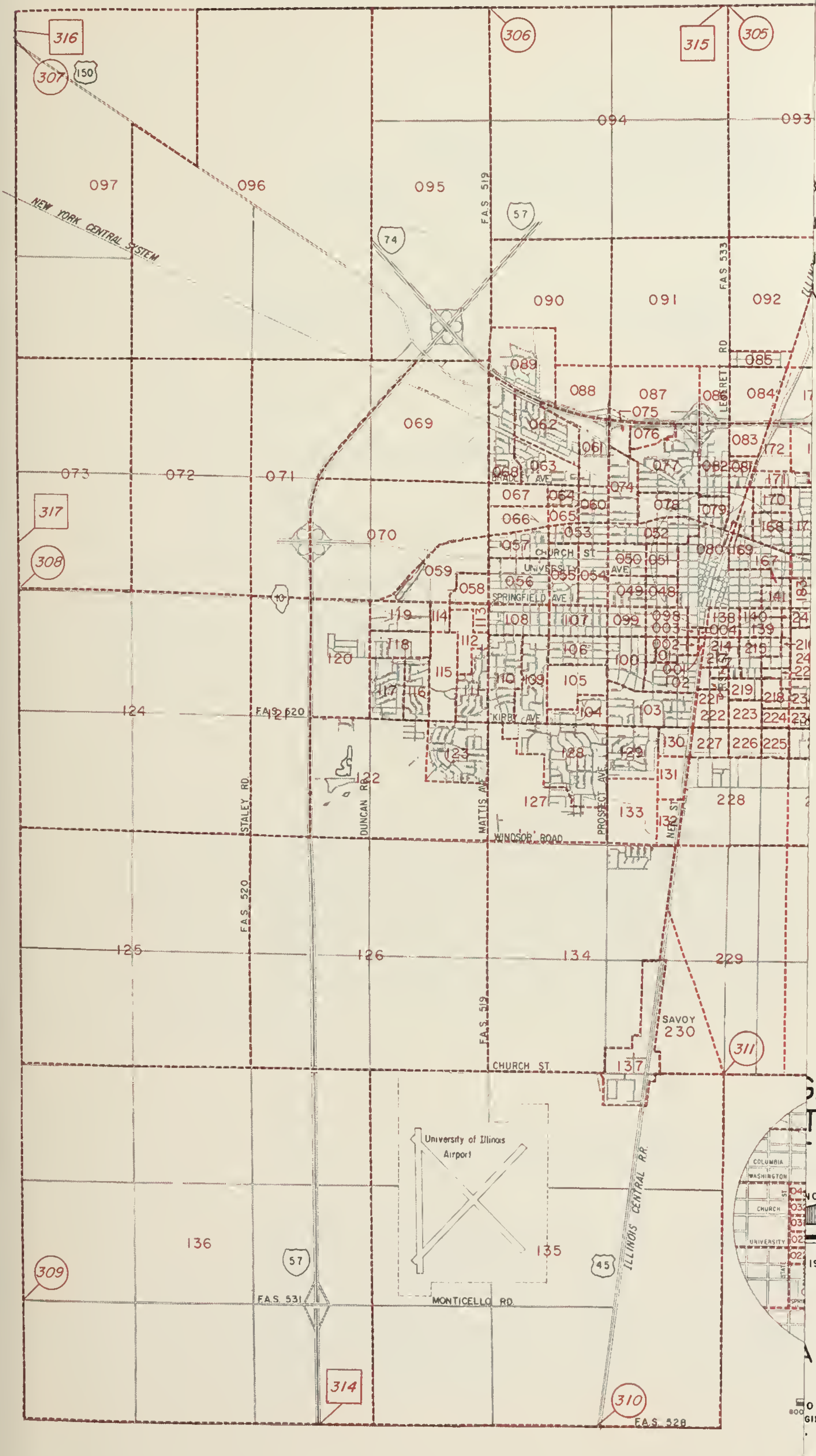


PLATE II-1

TRAFFIC ANALYSIS ZONES



E N D

OUNDARY

UMBER

NAL STATION NUMBER

NAL EXTERNAL STATION
FORECAST

map code	zone number
L	029
M	037
N	034
O	144
P	145
Q	148
R	151
S	152
T	154
U	163
V	164
W	298

GN - URBANA
TRANSPORTATION
UDY

ORTH

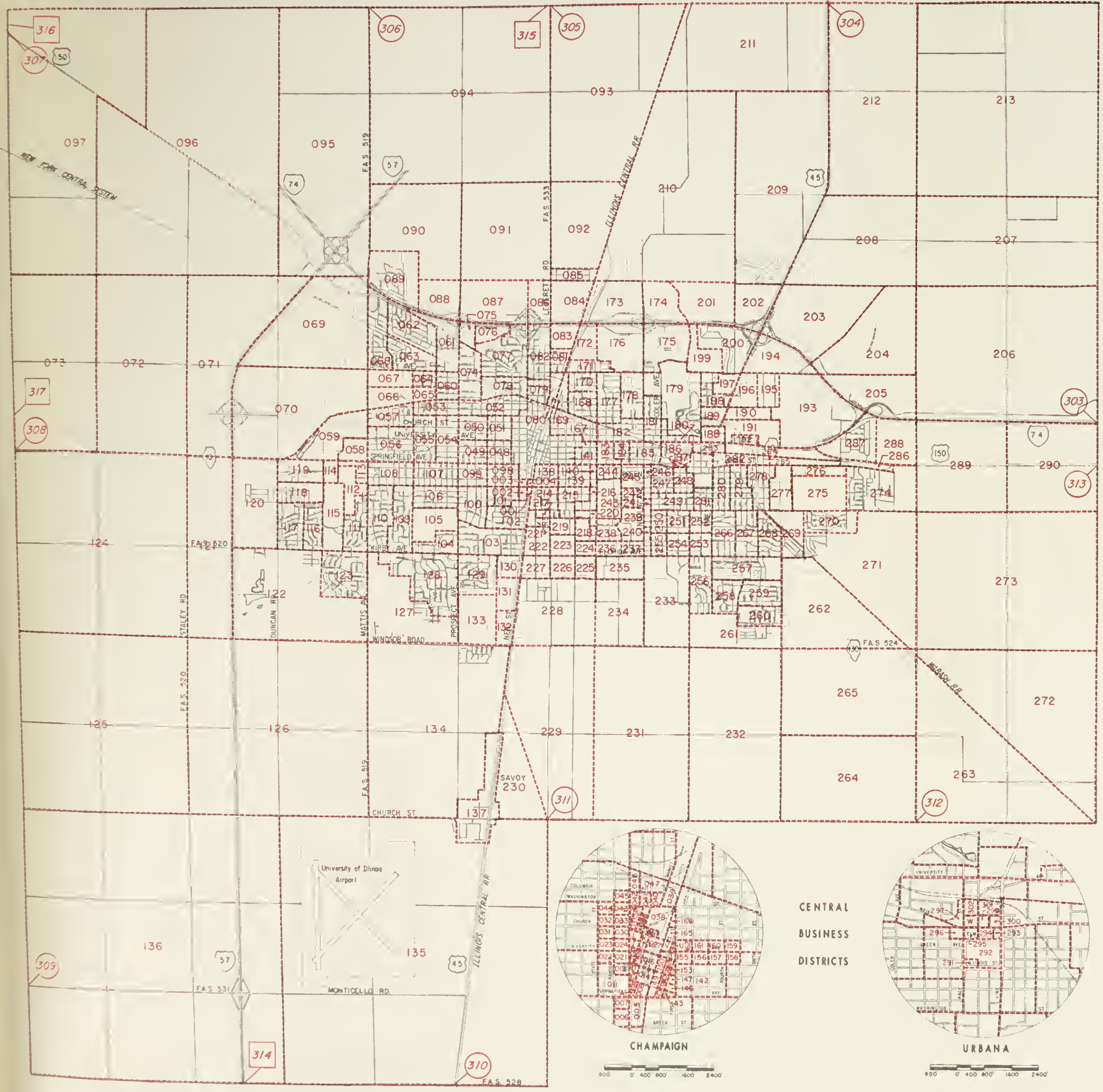
3200' 4800' 6400' 8000'

1965

ATE II-2

OMEW AND ASSOCIATES
GINEERS · LANDSCAPE ARCHITECTS
, TENNESSEE

TRAFFIC ANALYSIS ZONES



CENTRAL

BUSINESS

DISTRICTS

LEGEND

- - - - - ZONE BOUNDARY

207 ZONE NUMBER

303 EXTERNAL STATION NUMBER

315 ADDITIONAL EXTERNAL STATION USED IN FORECAST

map code	zone number	map code	zone number
A	009	L	029
B	010	M	037
C	013	N	034
D	015	O	144
E	017	P	145
F	018	Q	148
G	019	R	151
H	020	S	152
I	025	T	154
J	026	U	163
K	028	V	164
		W	298

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

PLATE II-2

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS · CIVIL ENGINEERS · LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TABLE II-1

SUMMARY OF 1963 EMPLOYMENT

Champaign-Urbana Urban Area Transportation Study

Employment Sector	Employees	Percent of Total Resident Employment
Trade	5,670	17.8
Manufacturing	2,745	8.6
Services (Education and Other)	23,560	73.6
Education	9,725	30.3
Other	13,835	43.3
Total Resident Employment	31,975	100.0
Employment-Nonresidents	7,750	-
TOTAL EMPLOYMENT	39,725	-

POPULATION

The Champaign-Urbana study area has experienced continuous population growth since 1900. The 1965 study area population, as developed from the origin-destination study data, is 94,236. Since 1940, the Champaign-Urbana study area has been gaining population at a much faster rate than the state of Illinois and at about the same rate as Champaign County. Table II-2, Population Changes, 1940-1965, presents pertinent population data for the state of Illinois, Champaign County, and the cities of Champaign and Urbana combined.(2)

EXISTING LAND USES

The existing land use pattern within the Champaign-Urbana study area is shown on Plate II-3, 1965 Generalized Land Use, in seven generalized categories--residential; manufacturing; transportation, communication and utilities; trade; services; cultural entertainment and recreational; and resources production and extraction. A summary of land use area by category is given in Table II-3, Summary of Land Use Acreages--1965.

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(2) Ibid.

TABLE II-2

POPULATION CHANGES, 1940-1965

Champaign-Urbana Urban Area Transportation Study

Area	1940[1]	1950[1]	Percent Change 1940-1950	1960[1]	Percent Change 1950-1960	1965[2]	Percent Change 1960-1965
Illinois	7,897,241	8,712,176	10	10,081,158	16	10,550,000	5
Champaign County	70,578	106,100	50	132,436	26	145,200	10
Champaign-Urbana	37,366	62,397	67	76,887	23	83,750[3]	9

---

[1] U. S. Census of Population, 1960.
[2] Statistical Abstract of The United States and data provided by Illinois Division Of Highways.
[3] 1965 Origin-Destination Survey.

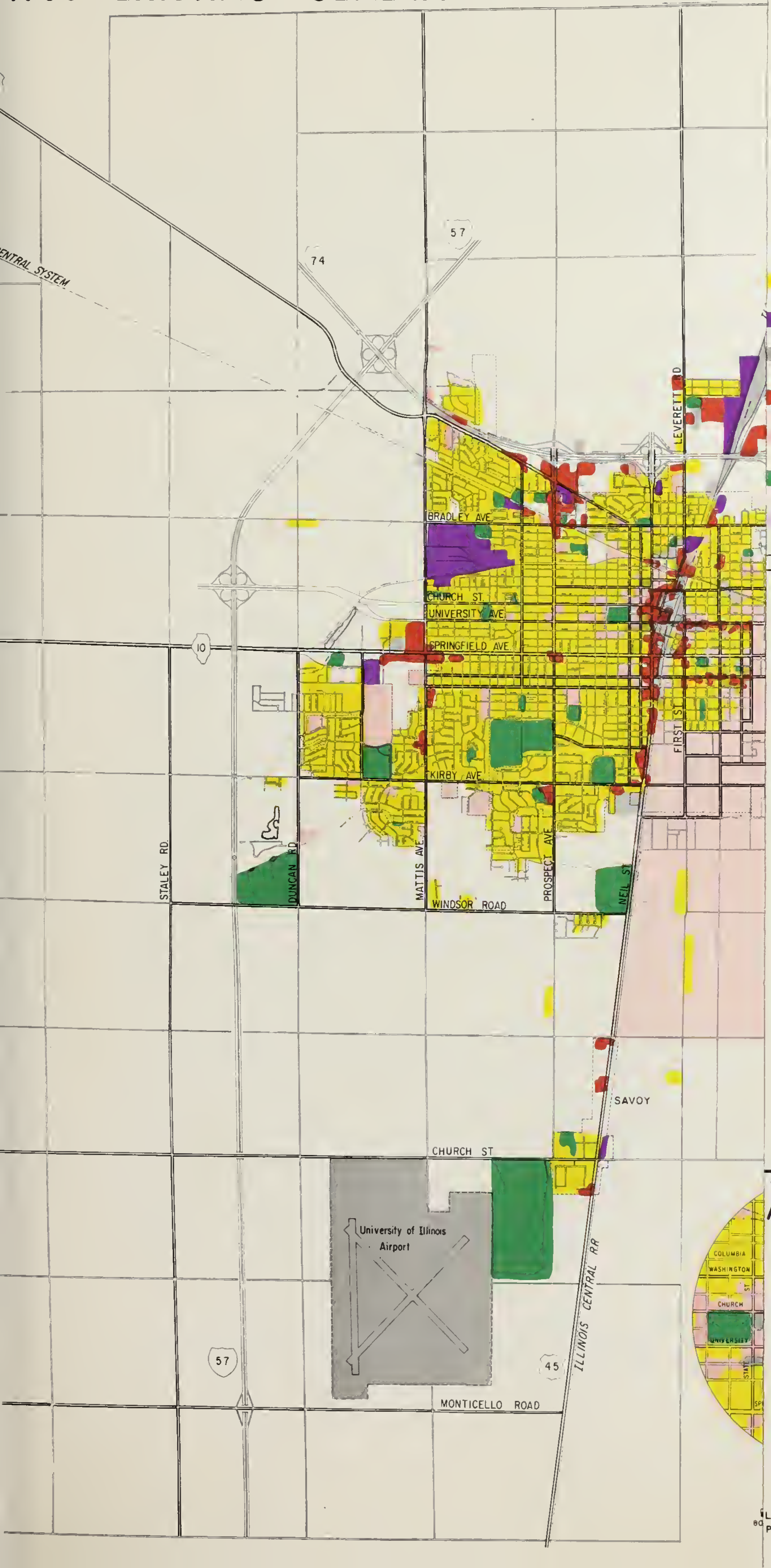
TABLE II-3

SUMMARY OF LAND USE ACREAGES-1965

Champaign-Urbana Urban Area Transportation Study

Land Use Category	Area In Acres	Percent Of Developed Acres	Acres/ 1000 People
Residential	4,482	29.7	47.5
Manufacturing	272	1.8	2.8
Transportation, Communication, and Utilities	5,400	35.8	57.3
Trade	352	2.3	3.7
Services	3,902	25.8	41.4
Cultural, Entertainment, and Recreation	695	4.6	7.3
Total Developed Area	15,103	100.0	160.0
Resource, Production, Extraction, Agriculture, and Undeveloped	66,191	--	701.0
GRAND TOTAL	81,294	--	861.0

1965 EXISTING GENERALIZED LAND USE



E G E N D

- 🟨 RESIDENTIAL
- 🟪 MANUFACTURING
- ▨ TRANSPORTATION, COMMUNICATION AND UTILITIES
- 🟥 TRADE
- ▧ SERVICES
- 🟩 CULTURAL, ENTERTAINMENT AND RECREATIONAL
- ▤ RESOURCE PRODUCTION AND EXTRACTION (EXCLUDING AGRICULTURE)
- ☐ AGRICULTURE, UNDEVELOPED LAND AND WATER AREAS

HAMPAIGN - URBANA AREA TRANSPORTATION STUDY

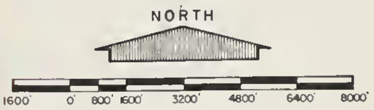
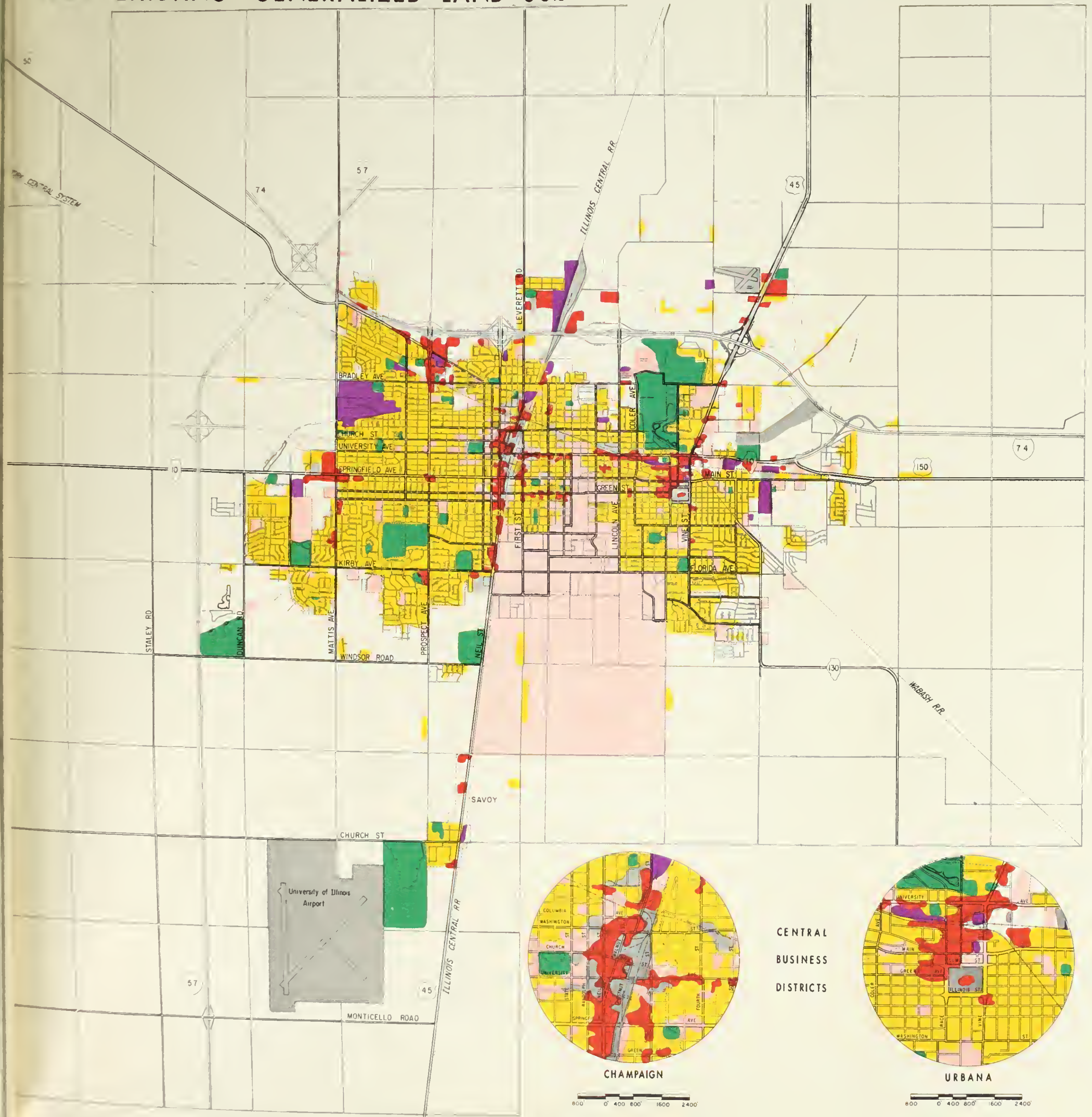


PLATE II-3

LAND BARTHOLOMEW AND ASSOCIATES
PLANNERS · CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

1965 EXISTING GENERALIZED LAND USE



LEGEND

- 🟨 RESIDENTIAL
- 🟪 MANUFACTURING
- ▨ TRANSPORTATION, COMMUNICATION AND UTILITIES
- 🟥 TRADE
- ▨ SERVICES
- 🟩 CULTURAL, ENTERTAINMENT AND RECREATIONAL
- ▨ RESOURCE PRODUCTION AND EXTRACTION (EXCLUDING AGRICULTURE)
- ☐ AGRICULTURE, UNDEVELOPED LAND AND WATER AREAS

CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION STUDY

NORTH

1600 0 800 1600 3200 4800 6400 8000

PLATE II-3

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

The study area covers 81,294 acres, or about 127 square miles, of which 23.6 square miles are now developed. The undeveloped acreage includes farming, resource production, mineral extraction, vacant land, and small water areas. The relatively large amount of undeveloped acreage suggests that the study area has considerable room for future expansion at the present density levels.

Single family residential development takes up the majority of residentially developed land in the communities. The direction of residential growth has been primarily to the southwest in Champaign and to the southeast and east in Urbana.

The major concentration of high density residential development is located in both cities surrounding the University of Illinois. Other locations of relatively high density residential development are near each Central Business District of both cities. Additional high density development is located sporadically throughout the cities along major thoroughfares.

There are areas of generally substandard housing in the study area. These are generally located north of Springfield Avenue, east of the Illinois Central Railroad, and west of Lincoln Avenue. See Plate II-3 for orientation.

Although the area's manufacturing base is small, it is diversified and is located in several areas of the two cities. Magnavox Electronics is located in east-central Urbana. Manufacturing of athletic equipment, bleachers, and building material supplies is located in an industrial area along the New York Central Railroad throughout Urbana. The amount of land devoted to manufacturing uses amounts to 272 acres. This is equivalent to 1.8 percent of the total developed area and a manufacturing land use consumption rate of 2.8 acres per 1,000. This rate is generally low when compared with other cities (8.4 acres per 1,000 persons reported in "Land Uses in American Cities," Harland Bartholomew, Harvard University Press, 1955).

Champaign's manufacturing area is located on the northwest edge of the city where Kraft and Humko have large food manufacturing plants. Other industrial areas having metal fabrication, building material supplies and printing establishments are located along the Illinois Central Railroad throughout the city. A large metal fabrication plant is located on the western edge of Champaign. A large petroleum tank field is located on Staley Road approximately 1.5 miles from the western edge of Champaign. Very little undeveloped land capable of sustaining industrial development is available within the corporate limits; consequently, new industry will probably locate outside the present corporate limits of both cities.

There are four major retailing centers in the community consisting of the two Central Business Districts, commercial development on Green Street near the University Campus area, and Country Fair Shopping Center. In addition, there are three major strip commercial locations occurring on North Prospect Avenue and South Neil Street in Champaign and University Avenue in Urbana. Commercial land uses comprised 352 acres of the total development in the study area.

Transportation-oriented warehouses have been established along Interstate 74 on the north side of both communities. The primary types and locations of major public utilities serving the community are a major sewage treatment plant and city dump facilities located in northeast Urbana. A major sewage treatment plant has been approved for construction on the copper slough drainage ditch located approximately 1.0 mile southwest of Champaign. The major use of transportation-oriented land, however, is the University of Illinois Airport located near Savoy in the southern portion of the study area.

Of the 3,902 acres used for services, the University of Illinois accounted for 3,500 acres, a fact pointing to the dominance of the University of Illinois in the economy of the area.

The major recreational area of significance in Urbana is located in the northern section of the city and consists of Crystal Lake Park (public), Champaign County Fairgrounds (public), and the Urbana Golf and Country Club (private). Champaign has two significant recreation areas located in the southwestern section of the city consisting of Champaign County Country Club (private) and Centennial Park (public). The major outlying recreation area having significance is the University of Illinois golf course located near Savoy in the southern portion of the study area.

Agricultural land surrounds the community on all sides within the study area. The land is flat or gently rolling and generally offers no major problems for development.

Land being used for resource production in the form of gravel and sand mining operations is located on the southwest edge of Champaign. The high water table in this area has caused permanent lakes to be formed, and high quality residential development has already occurred around the exhausted resource areas.(3)

TRANSPORTATION FACILITIES AND FUNCTIONAL CLASSIFICATION

Streets and highways provide the basic transportation function in an urban area. About 97 percent of the person trips in the study area occur in private vehicles on the street system. In providing the basic transportation for the area, the streets and highways are intended to provide two service functions--traffic service and land service for people. Traffic service generally relates to accommodating vehicles during the portion of their trips between termini while land service relates to providing ingress and egress to abutting land uses. As traffic desire movements across and within an area increase, the proportion of demand related to traffic service, as a general rule, increases; and, where very high volumes result, certain streets and highways can be provided basically for traffic service. However, the majority of the mileage of streets and highways must accommodate both traffic service and land service demands.

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(3) Ibid.

FUNCTIONAL CLASSIFICATION OF EXISTING STREET SYSTEM

Functional classification of the existing street system was determined according to existing physical characteristics, service to abutting properties, local use, and geometric classification. The classified street and highway system in the study area is comprised of the following: freeways, expressways, major streets, major highways, collector streets, and collector highways. These functional classes are defined in accordance with the standard definitions adopted by the Illinois Division of Highways, Department of Public Works and Buildings.

Plate II-4, Street and Highway Classification Map--1965, presents the classification of the Champaign-Urbana urban area street system in existence in 1965. Table II-4, Existing Network Functional Classification, summarizes the 1965 mileage for the major classifications in the study area.(4)

PHYSICAL INVENTORY AND TRAFFIC ENGINEERING FEATURES

A knowledge of the existing physical characteristics of the major street system of the study area is necessary in the evaluation of existing service and the determination of future needs.

The inventory of the existing streets within the study area included pavement type, pavement width, right-of-way width, parking conditions, shoulder width, median width, horizontal and vertical clearances at structures, direction of traffic operation (one-way, etc.), sidewalks, and length of street segment.

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(4) See additional details in Interim Report D, Transportation Facilities Inventory, Harland Bartholomew and Associates, May, 1967.

TABLE II-4

EXISTING NETWORK FUNCTIONAL CLASSIFICATION

Champaign-Urbana Urban Area Transportation Study

Jurisdiction	Freeway	Expressway	Major Streets and Highways	Collector Streets and Highways	Total
	CLASSIFICATION (MILEAGE)				
Champaign	-	-	24.35	19.14	43.49
Urbana	-	-	11.78	17.15	28.93
Champaign County	19.78	1.01	28.00	34.43	83.22
TOTAL	19.78	1.01	64.13	70.72	155.64

The existing classified system is a reasonably well defined grid system. The major streets and highways are generally one mile apart except in the central areas where the spacing is much closer. The existing right-of-way width on most major streets is such (60 feet or more) that it could accommodate a major street cross section. Several major streets and highways are continuous throughout the length of the existing developed area. In an east-west direction, three major streets are continuous. These are University Avenue, Springfield Avenue-Main Street, and Kirby-Florida. Similarly, U.S. 45-Neil Street, Mattis Avenue, Prospect Avenue, and Lincoln Avenue extend through the developed area in a north-south direction. Other streets of lesser continuity but extending along a major portion of the developed area are shown on Plate II-4.

The majority of the streets in the study area may be relatively easily extended either along existing roads of lower type on dedicated rights-of-way or through relatively undeveloped areas. Such streets include Bradley Avenue, Windsor Road, Vine Street, Washington Avenue, and others. Detailed information regarding existing physical conditions is not included in this report but has been developed separately in interim technical reports.

The inventory of existing (1965) traffic engineering features on the classified street and highway network included location and description of signal systems, parking restrictions, stop and yield controls, pedestrian controls, turn restrictions, channelization, route markings, street lighting, and the identification of existing traffic bottlenecks. These traffic engineering features are summarized on Plate II-5A, Traffic Engineering Features Map, Traffic Control Devices, and Plate II-5B, Traffic Engineering Map, Parking. The details of this inventory are also contained in an interim report developed separately.(5)

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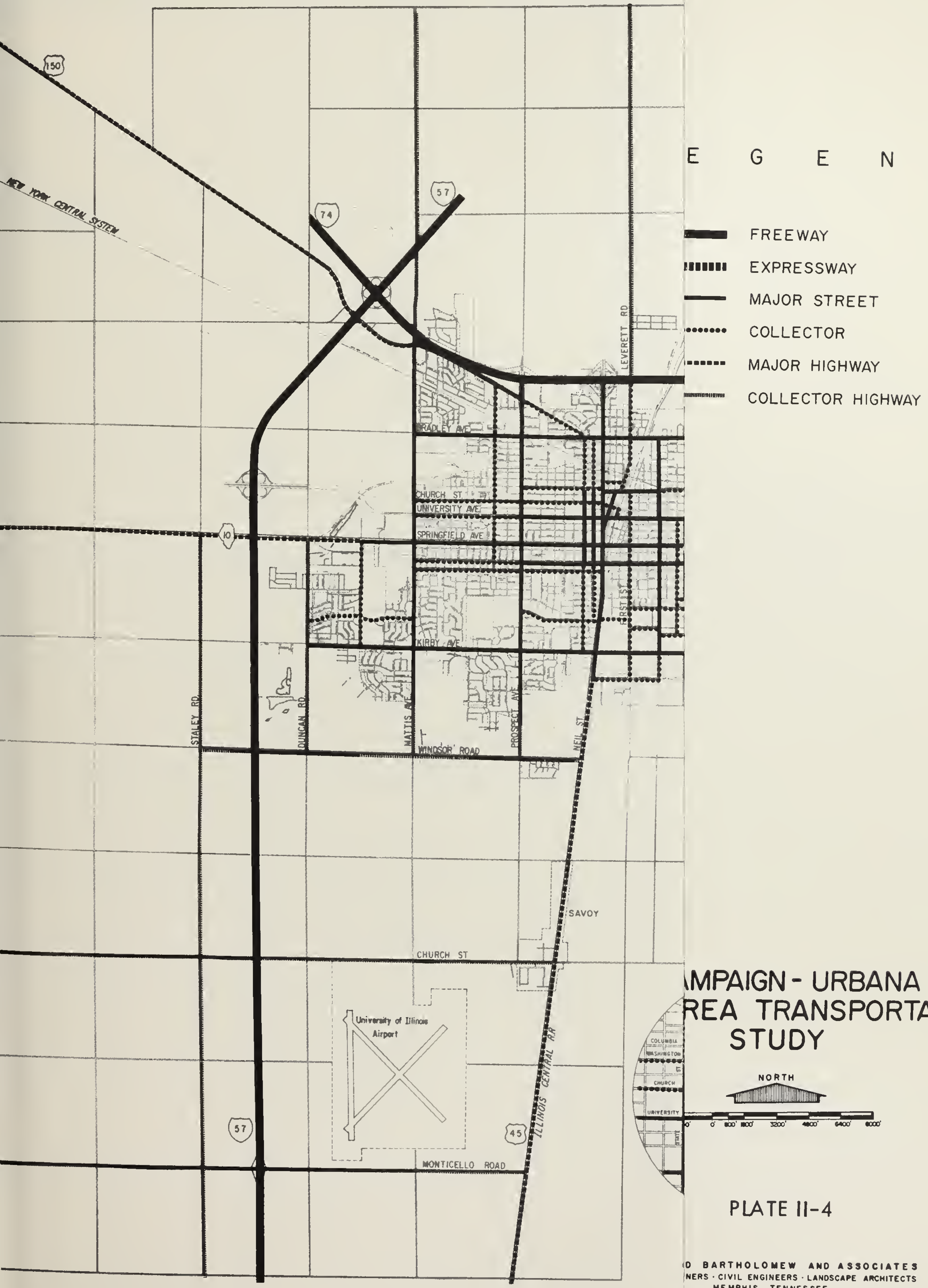
(5) Ibid.

TREET AND HIGHWAY CLASSIFICATION MAP

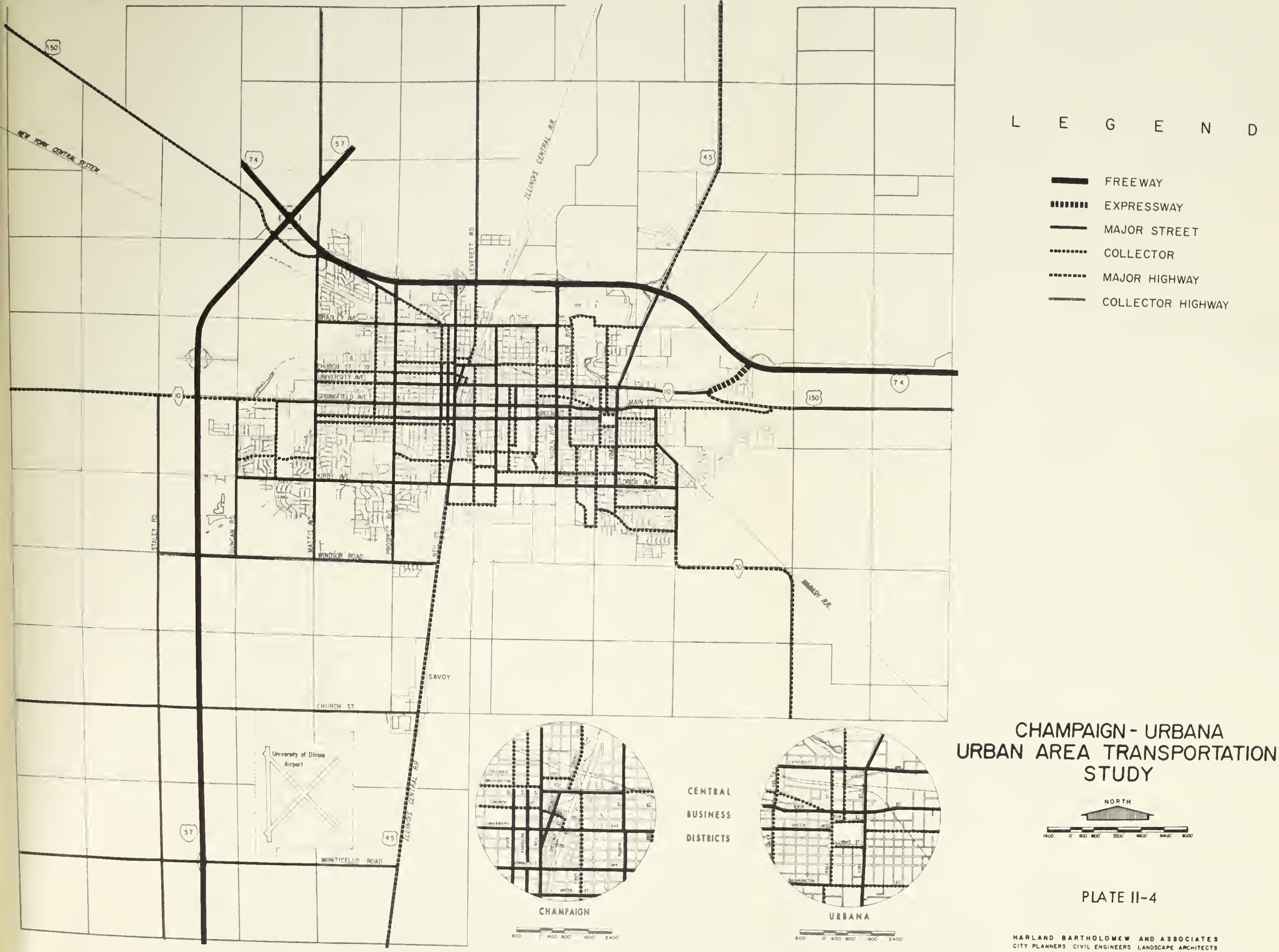


MPAIGN - URBANA
REA TRANSPORTATION
STUDY

PLATE II-4

D BARTHOLOMEW AND ASSOCIATES
NERS · CIVIL ENGINEERS · LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

STREET AND HIGHWAY CLASSIFICATION MAP

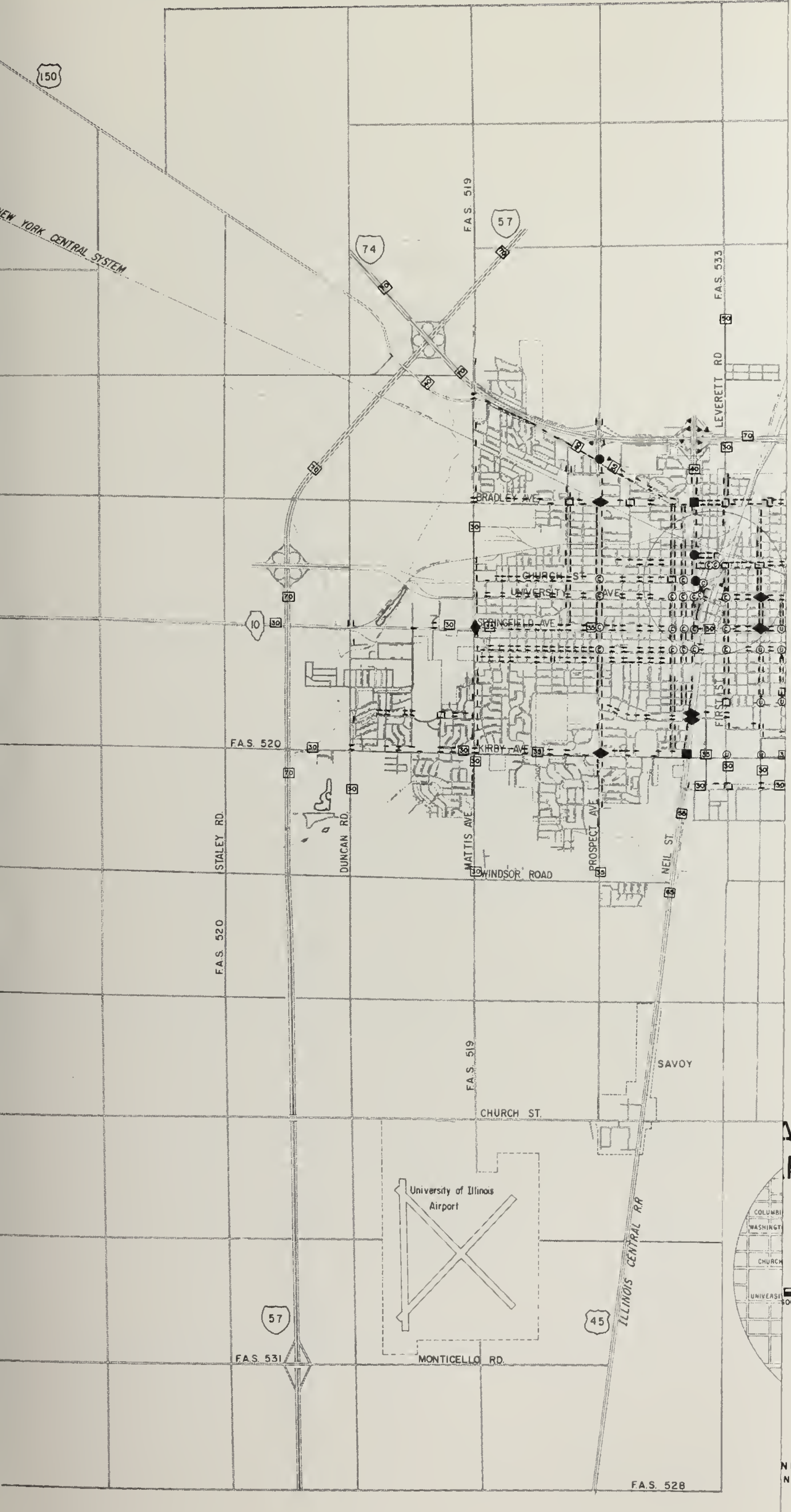


CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION
STUDY

PLATE II-4

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

RAFFIC ENGINEERING FEATURES MAP TRAFFIC



EGEND

FIXED TIME SIGNAL

SEMI-ACTUATED SIGNAL

FULLY-ACTUATED SIGNAL

LEFT TURN ARROW
ACCOMPANYING SIGNAL

CITY OF CHAMPAIGN CENTRALIZED
TRAFFIC CONTROL SYSTEM

UNIVERSITY OF ILLINOIS CENTRALIZED
TRAFFIC CONTROL SYSTEM

STOP SIGNS

YIELD SIGNS

SPEED LIMITS

AMPAIGN - URBANA
REA TRANSPORTATION
STUDY

NORTH

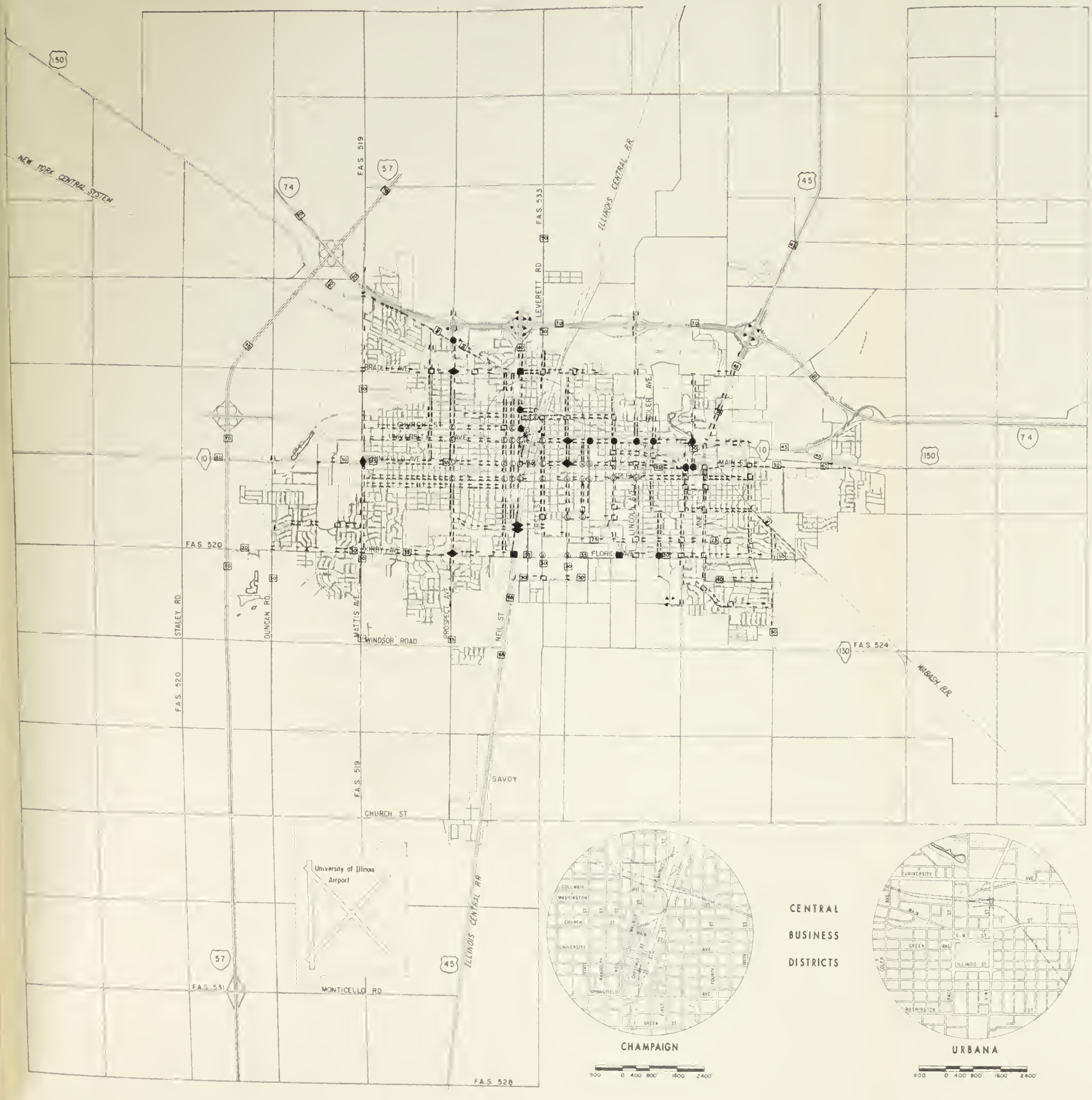
00' 0' 800' 1600' 3200' 4800' 6400' 8000'

1965

PLATE II-5A

ND BARTHOLOMEW AND ASSOCIATES
NNERS · CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TRAFFIC ENGINEERING FEATURES MAP TRAFFIC CONTROL DEVICES



L E G E N D

●	FIXED TIME SIGNAL
◆	SEMI-ACTUATED SIGNAL
■	FULLY-ACTUATED SIGNAL
✧	LEFT TURN ARROW ACCOMPANYING SIGNAL
©	CITY OF CHAMPAIGN CENTRALIZED TRAFFIC CONTROL SYSTEM
ⓤ	UNIVERSITY OF ILLINOIS CENTRALIZED TRAFFIC CONTROL SYSTEM
–	STOP SIGNS
▼	YIELD SIGNS
30	SPEED LIMITS

CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION
STUDY

NORTH

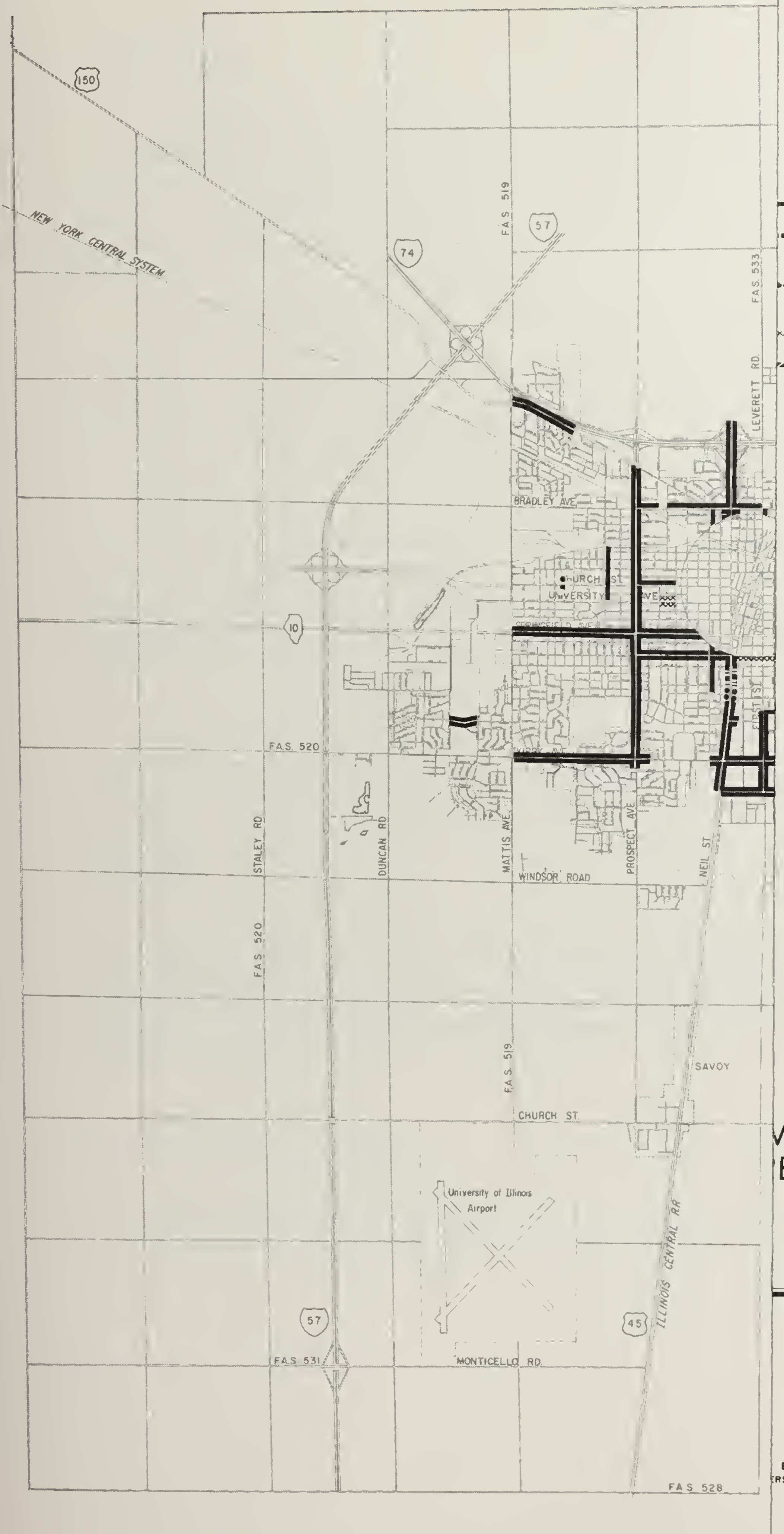
1600 0 800 1600 3200 4800 6400 8000

1965

PLATE II-5A

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS · CIVIL ENGINEERS · LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TRAFFIC ENGINEERING FEATURES MAP PARKIN



E G E N D

NO RESTRICTION
NO PARKING
METER PARKING
1 HOUR PARKING (NO METER)
2 HOUR PARKING (NO METER)
PEAK HOUR REMOVAL
DAY OF WEEK REMOVAL

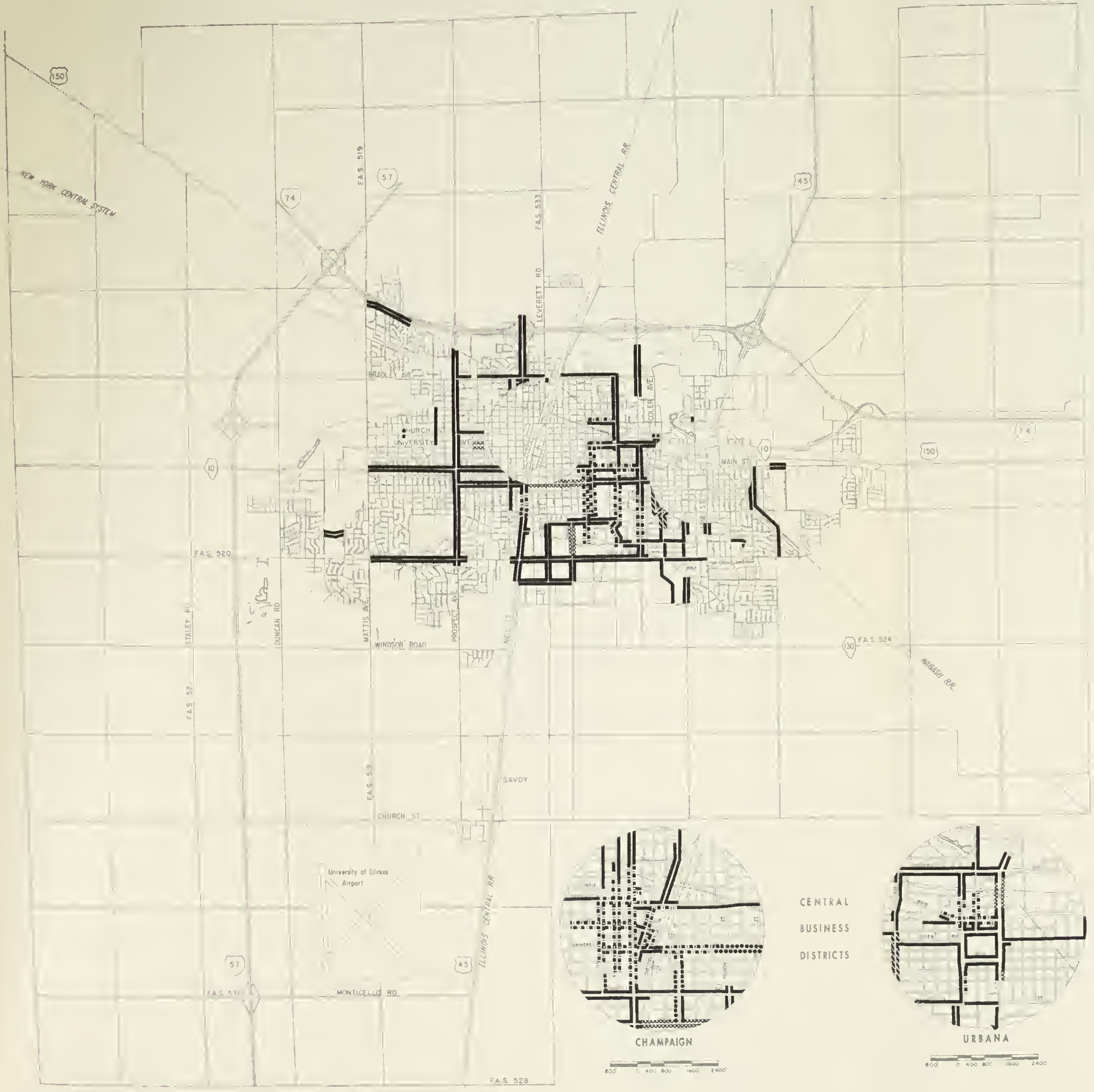
MPAIGN - URBANA
EA TRANSPORTATION
STUDY

NORTH
0 800 1600 3200 4800 6400 8000
1965

PLATE II-5B

BARTHOLOMEW AND ASSOCIATES
RS · CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TRAFFIC ENGINEERING FEATURES MAP PARKING



LEGEND

NO RESTRICTION
━━ NO PARKING
-·-·-·- METER PARKING
········ 1 HOUR PARKING (NO METER)
2 HOUR PARKING (NO METER)
xxxxxxxx PEAK HOUR REMOVAL
//////// DAY OF WEEK REMOVAL

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

NORTH
1600 0 800 1600 3200 4800 6400 8000
1965

PLATE II-5B

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

SPEED-DELAY

An important measure of existing traffic conditions on the major street system is the time it takes motorists to go to their destinations and the delay experienced at various locations. As a general rule, travel time varies directly with traffic volume. As traffic volumes increase, the travel time increases. The travel time study is valuable in pointing up specific problem locations and serves as an input item for other portions of the study.

Travel times within the study area vary. These variations depend upon functional class of travel facility, volume-to-capacity ratios, volume of cross traffic and frequency of intersections, side interference, traffic control devices, pavement condition, pedestrian volume, and volume of turning movements. Generally, travel time and delay are excessive in the CBD and improve with distance from the CBD.

Vehicular travel time studies were made on selected routes of the existing street system. It involved the performance of timed vehicle runs during the afternoon peak hour and during off-peak hours using the "floating car" technique over a period of several days between November 23 and December 15, 1965. The selected routes represented all classifications of streets and highways as well as area characteristics, such as Central Business District, fringe, residential, or outlying.

Plates II-6A, II-6B, and II-6C are isochronal charts for the Champaign and Urbana central areas and the University of Illinois campus which indicates the approximate total travel time from the center of each area to other points in the transportation study area. Also indicated are intersection locations at which experienced delay was in excess of eight (8) seconds.

A review of these plates indicates that the longest travel times from the Champaign Central Business District, the Urbana Central Business District, and the University of Illinois within the urbanized area are approximately 13 minutes, 15 minutes, and 10 minutues, respectively. The plates also indicate that substantial delays are encountered on University Avenue, Springfield Avenue, and Green Street.(6)

EXISTING TRAFFIC VOLUMES

Traffic volume counts were provided for all segments of the classified street and highway system in the study area. Also, traffic volume data were provided for sixteen critical intersections in the study area representative of traffic conditions in areas of the Central Business Districts, fringe, and residential characteristics. Traffic volume counts provide information for the analyses of existing traffic operations, checking the results of the origin-destination survey, and for determining the adequacy of the existing street system. The 1965 traffic volumes on existing major streets and highways in the study area are shown on Plate II-7, 1965 Average Daily Traffic. This plate indicates that University Avenue carries in excess of 21,000 vehicles on the average day; and the highest volumes of traffic are occurring on University Avenue, Neil Street, Prospect Avenue, Kirby-Florida Avenue, Springfield Avenue, and Green Street.(7)

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(6) Ibid.

ACCIDENTS

The Illinois Division of Highways and the local agencies provided the information required to analyze the accident experience in the study area. Plate II-8, Accident Location Map, summarizes the 1964 and 1965 accident rates on the various segments of the Champaign-Urbana transportation study area and indicates the relatively high accident locations and the total number of accident occurrences.

The accident rates for both street sections and intersections were found not to be critical. However, relative to the remainder of the area, only one link; i.e., Neil Street between Columbia and Washington Streets, and two intersections; i.e., Interstate 74 at Interstate 57 and University Avenue at Chestnut Street, could be considered as dangerous accident locations.

Based upon either national or statewide unit costs for each accident severity class; i.e., fatality, personal injury, and property damage only, the system of collector highways located within the study area had the greatest average cost per accident, approximately $2,900 per accident based on national costs. This compares with a cost per accident of $1,620 for major highways. The major street system had the lowest average cost ($800) per accident.(8)

SOCIAL AND COMMUNITY VALUES

In the development of the transportation plan, full consideration must be given to the possibility of utilizing elements of the plan to raise the standards of the study area. Open

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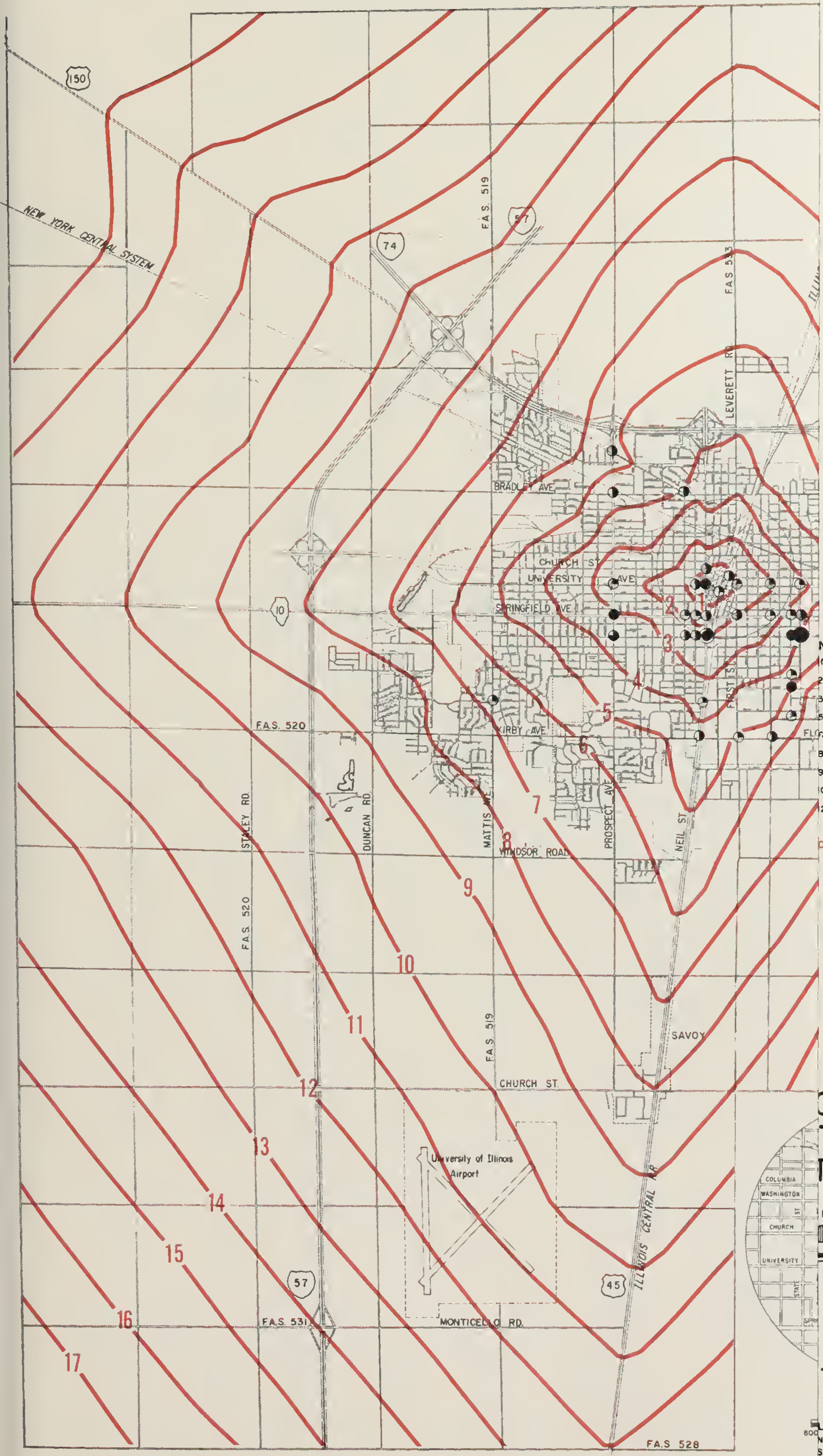
(7) Ibid.

(8) Ibid.

1965 PEAK HOUR ISOCHRONAL CHART CHAMPAIGN



E N D

N SECONDS
NTERSECTIONS)
21 SECONDS
37 SECONDS
52 SECONDS
67 SECONDS
82 SECONDS
97 SECONDS
102 SECONDS
127 SECONDS
MINUTES
CENTRAL BUSINESS DISTRICT

GN - URBANA
TRANSPORTATION
TUDY

NORTH

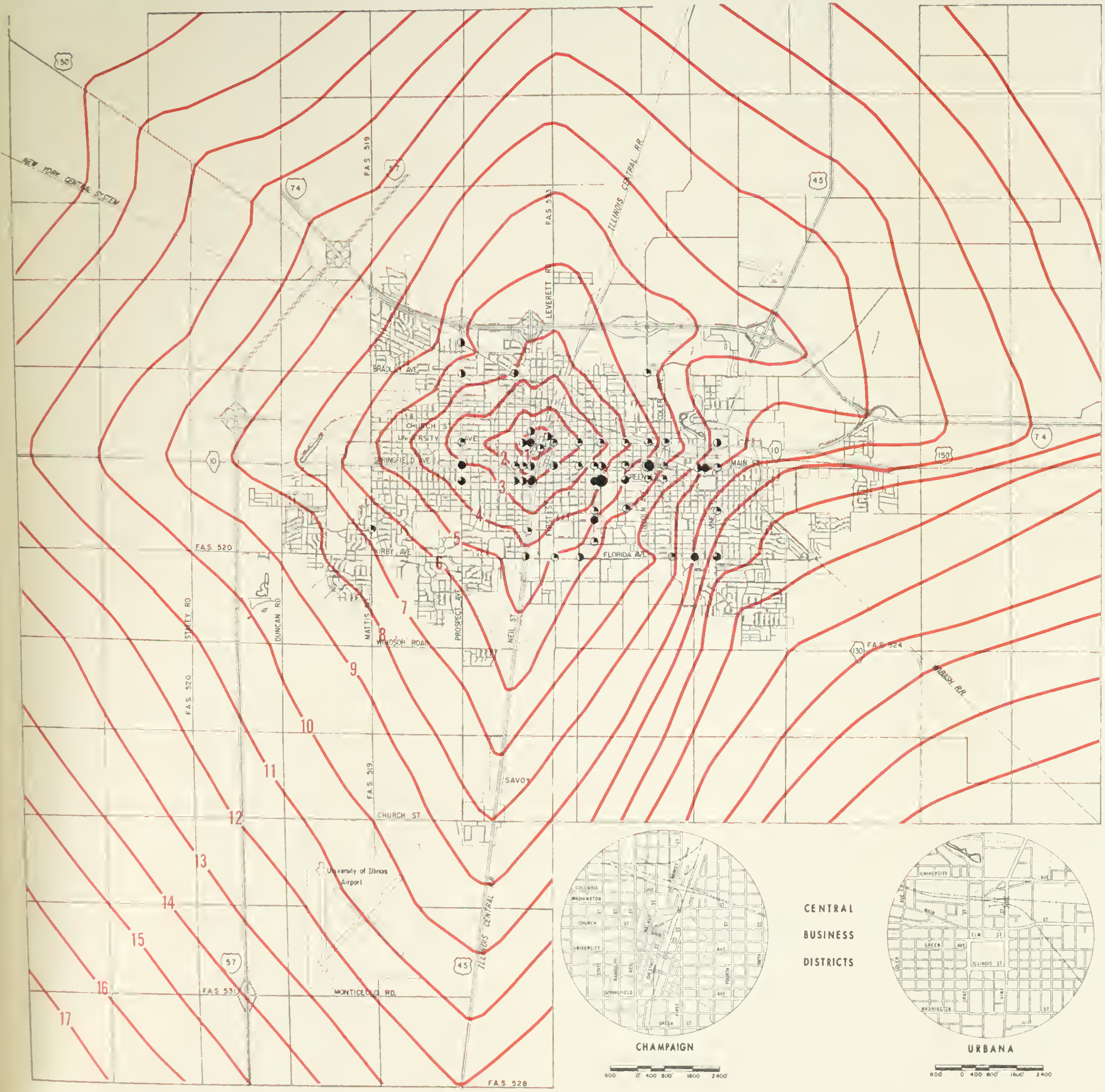
3200' 4800' 6400' 8000'

1965

TE II-6A

LOMEW AND ASSOCIATES
NGINEERS · LANDSCAPE ARCHITECTS
S, TENNESSEE

1965 PEAK HOUR ISOCHRONAL CHART CHAMPAIGN



LEGEND

AVERAGE DELAY IN SECONDS
(AT REPRESENTATIVE INTERSECTIONS)

- ◔ 8 SECONDS TO 21 SECONDS
- ◑ 22 SECONDS TO 37 SECONDS
- ◕ 38 SECONDS TO 52 SECONDS
- ● 52 SECONDS TO 67 SECONDS
- ● 68 SECONDS TO 82 SECONDS
- ● 83 SECONDS TO 97 SECONDS
- ● 98 SECONDS TO 102 SECONDS
- ● 103 SECONDS TO 127 SECONDS
- —1— TIME INTERVAL IN MINUTES FROM CHAMPAIGN CENTRAL BUSINESS DISTRICT

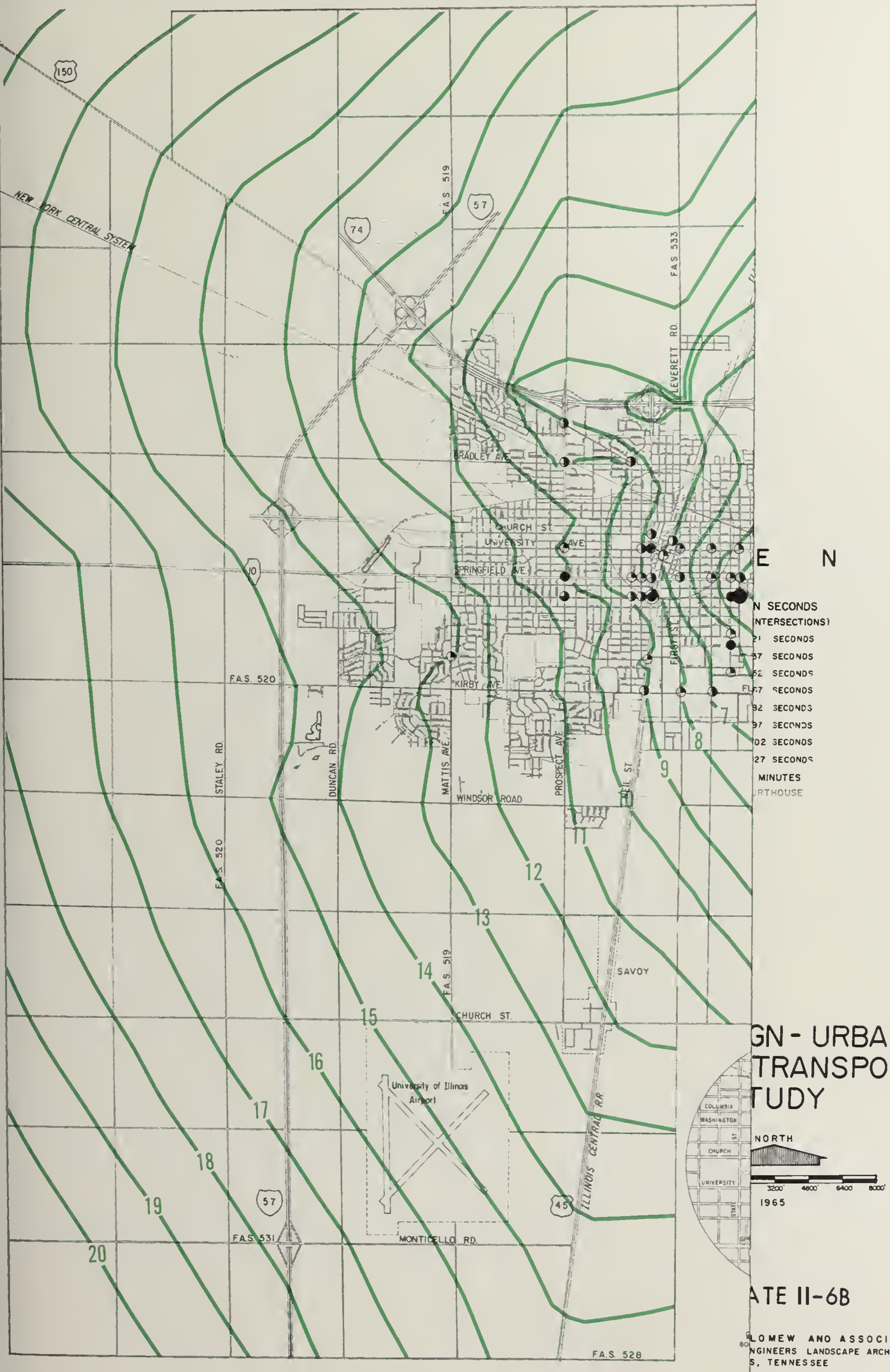
CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

NORTH
1600 0 800 1600 3200 4800 6400 8000
1965

PLATE II-6A

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

1965 PEAK HOUR ISOCHRONAL CHART URBANA

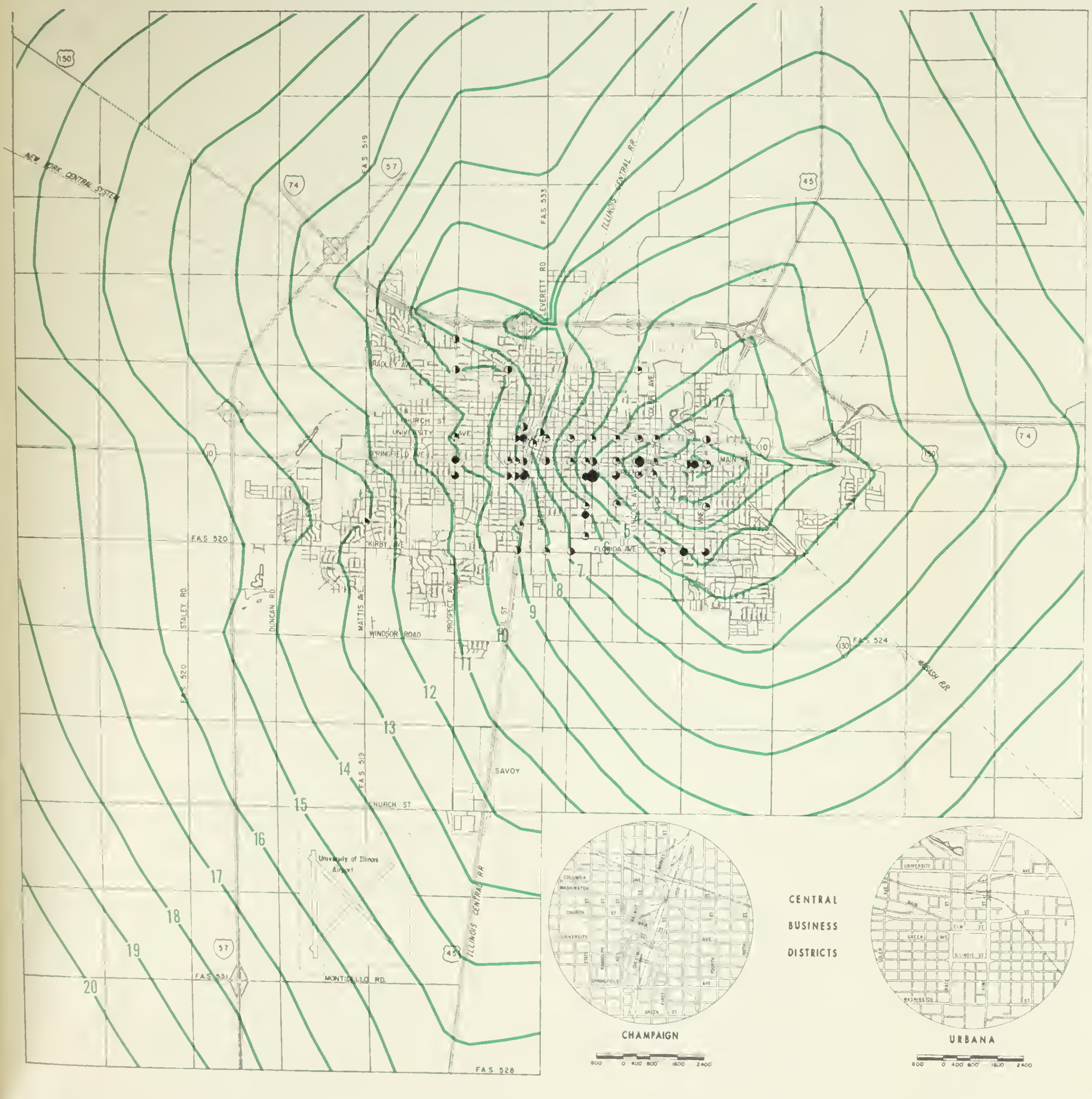


GN - URBANA
TRANSPORTATION
TUDY

ATE II-6B

LOMEW AND ASSOCIATES
NGINEERS LANDSCAPE ARCHITECTS
S, TENNESSEE

1965 PEAK HOUR ISOCHRONAL CHART URBANA



LEGEND

AVERAGE DELAY IN SECONDS
(AT REPRESENTATIVE INTERSECTIONS)

- 8 SECONDS TO 21 SECONDS
- 22 SECONDS TO 37 SECONDS
- 38 SECONDS TO 51 SECONDS
- 52 SECONDS TO 67 SECONDS
- 68 SECONDS TO 82 SECONDS
- 83 SECONDS TO 97 SECONDS
- 98 SECONDS TO 102 SECONDS
- 103 SECONDS TO 127 SECONDS

—1— TIME INTERVAL IN MINUTES FROM URBANA [illegible]

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

NORTH

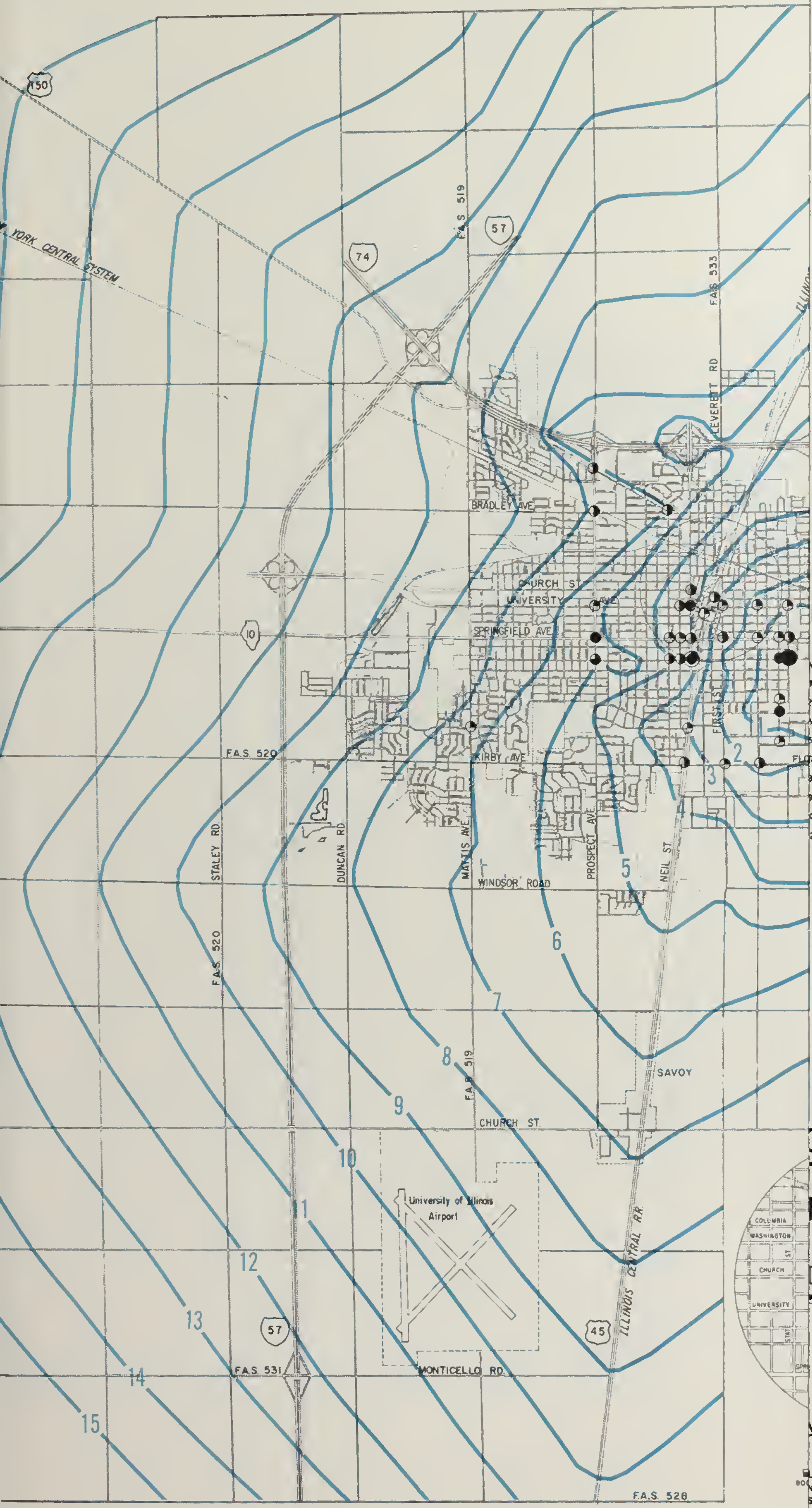
1600 0 800 1600 3200 4800 6400 8000

1965

PLATE II-6B

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

65 PEAK HOUR ISOCHRONAL CHART UNIVERSITY



E N D

N SECONDS
NTERSECTIONS)
1 SECONDS
7 SECONDS
2 SECONDS
7 SECONDS
82 SECONDS
7 SECONDS
02 SECONDS
27 SECONDS
MINUTES
OF ILLINOIS

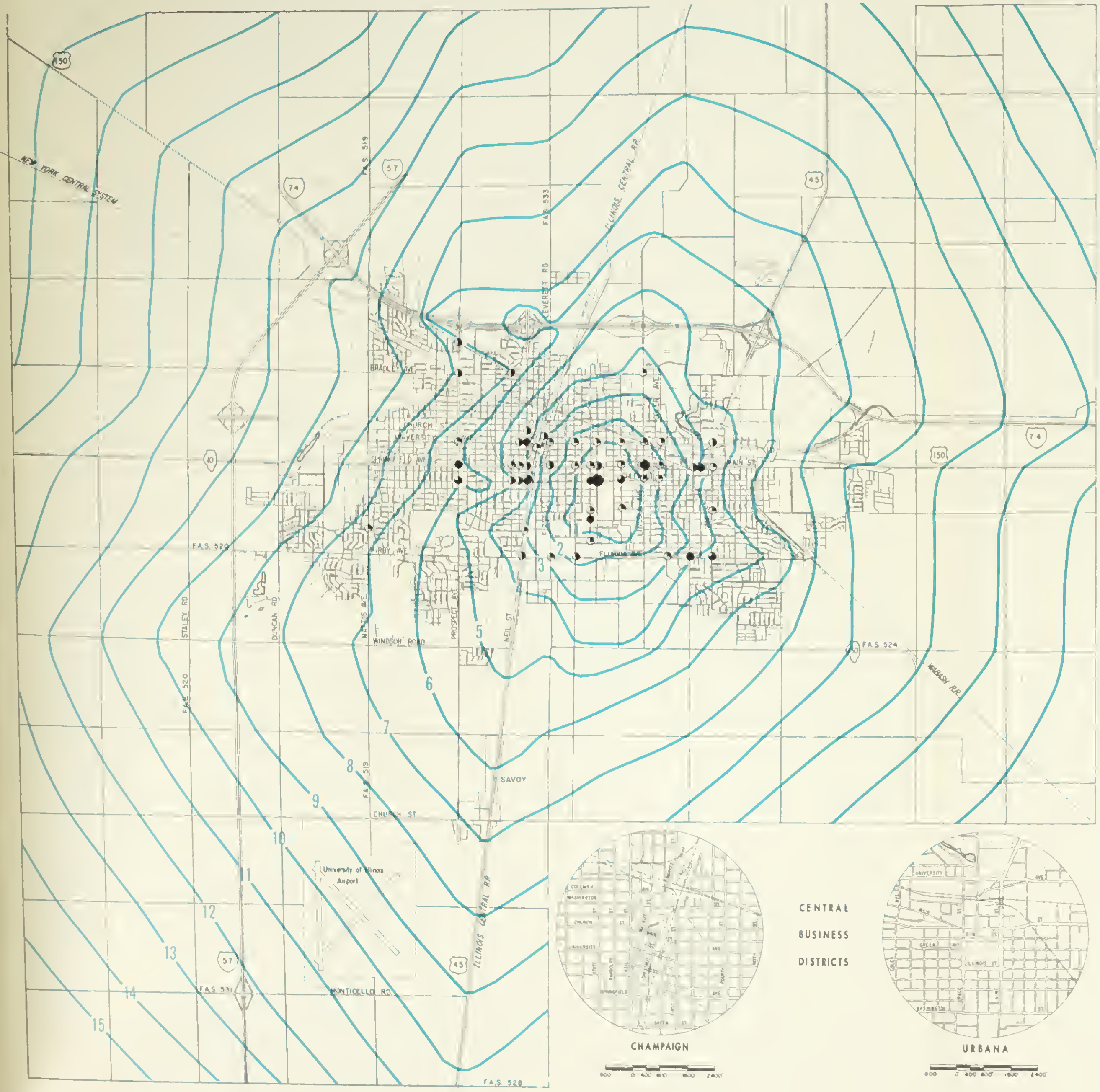
GN - URBANA
TRANSPORTATION
TUDY

NORTH
3200' 4800' 6400' 8000'
1965

ATE II-6C

LOMEW AND ASSOCIATES
NGINEERS LANDSCAPE ARCHITECTS
S, TENNESSEE

1965 PEAK HOUR ISOCHRONAL CHART UNIVERSITY OF ILLINOIS



L E G E N D

AVERAGE DELAY IN SECONDS
(AT REPRESENTATIVE INTERSECTIONS)

◔ 8 SECONDS TO 21 SECONDS
◑ 22 SECONDS TO 37 SECONDS
◕ 38 SECONDS TO 52 SECONDS
● 52 SECONDS TO 67 SECONDS
● 68 SECONDS TO 82 SECONDS
● 83 SECONDS TO 97 SECONDS
● 98 SECONDS TO 102 SECONDS
● 103 SECONDS TO 127 SECONDS

TIME INTERVAL IN MINUTES
—1— FROM UNIVERSITY OF ILLINOIS

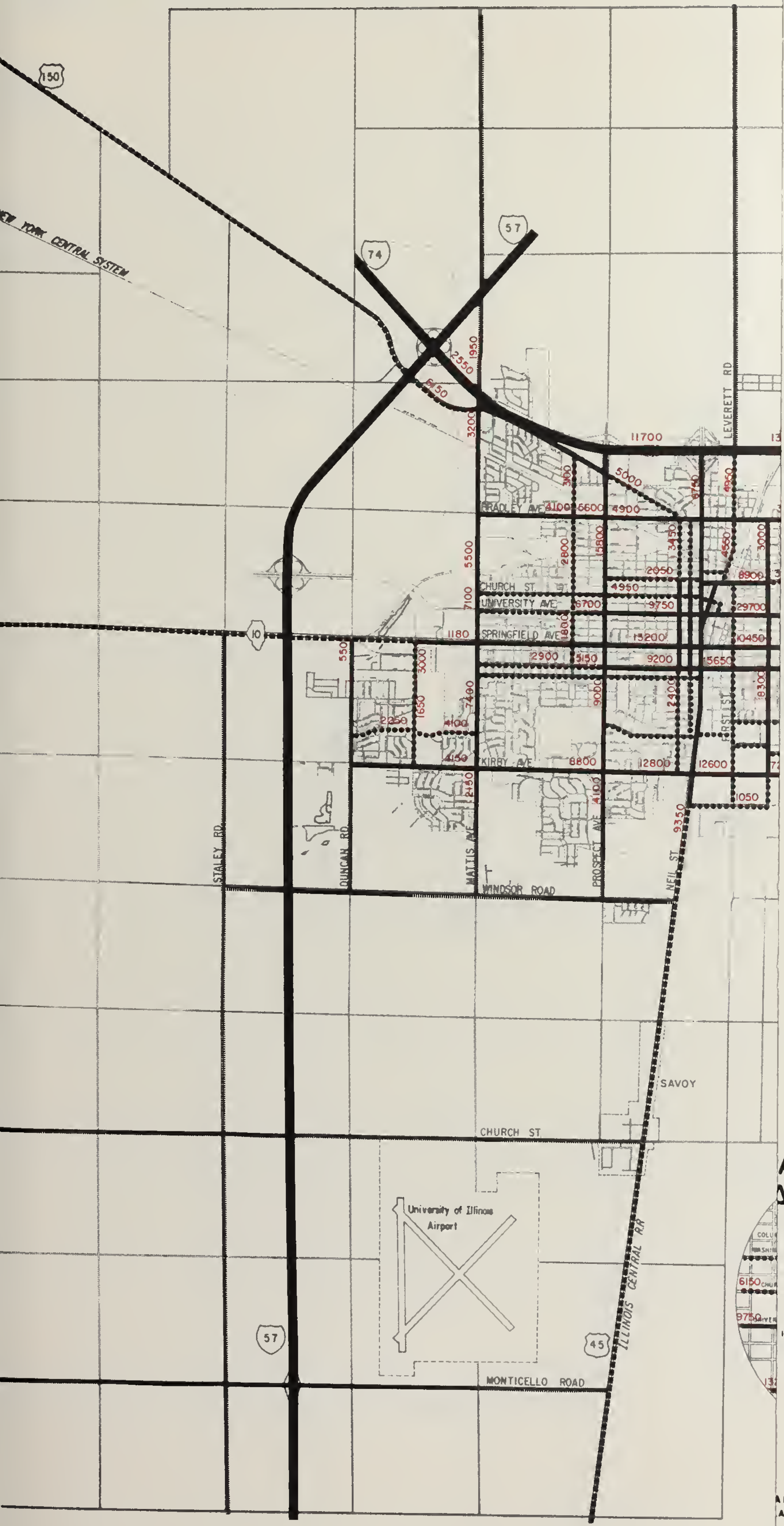
CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION
STUDY

NORTH
1600 0 800 1600 3200 4800 6400 8000
1965

PLATE II-6C

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

965 AVERAGE DAILY TRAFFIC



E G E N D

▬ FREEWAY

▮▮▮▮▮ EXPRESSWAY

— MAJOR STREET

••••••••• COLLECTOR

▪▪▪▪▪▪ MAJOR HIGHWAY

▨ COLLECTOR HIGHWAY

2150 1965 AVERAGE DAILY TRAFFIC

AMPAIGN - URBANA
AREA TRANSPORTATION
STUDY

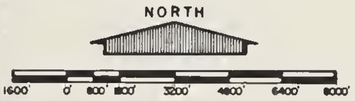
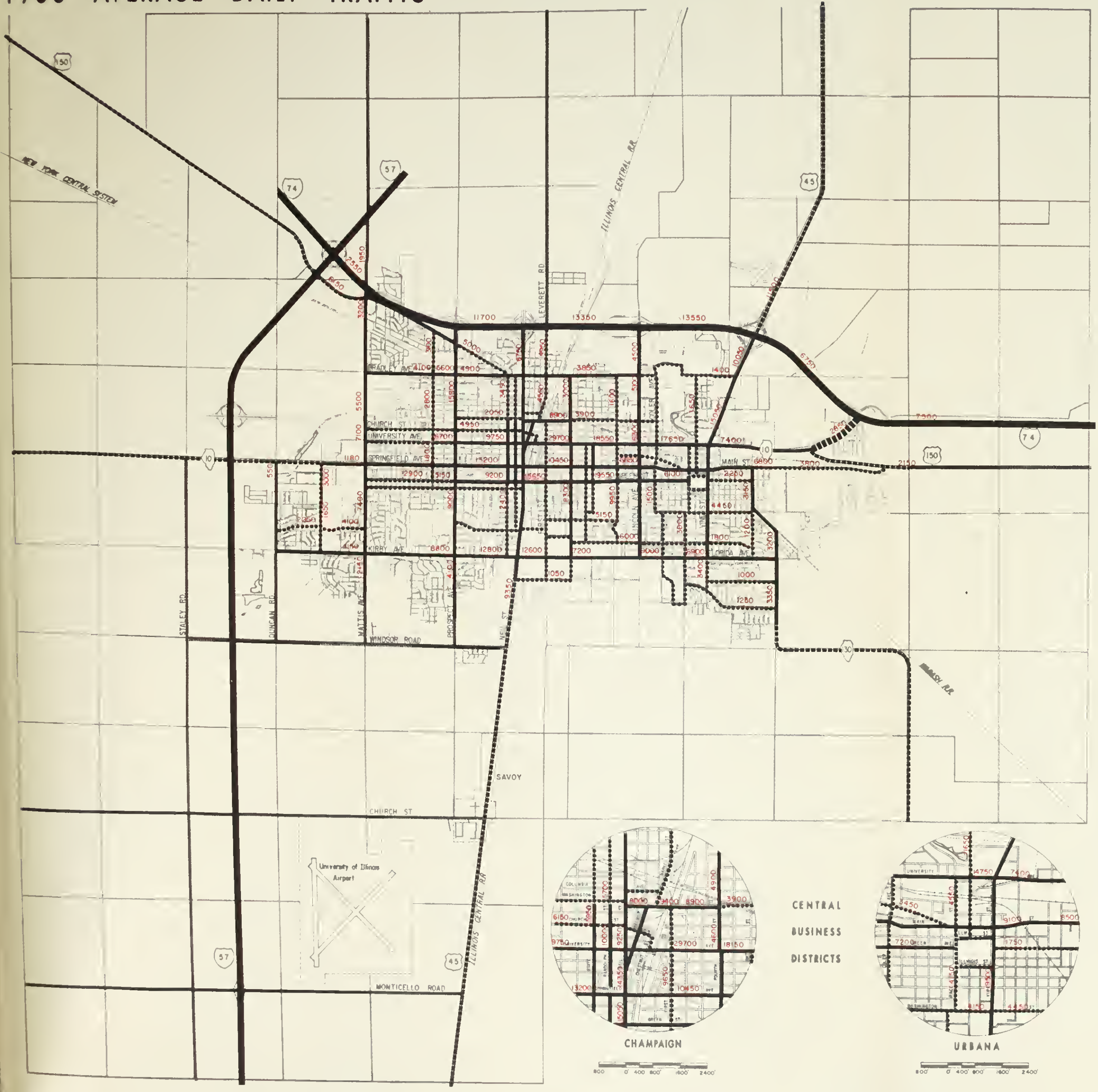


PLATE II-7

AND BARTHOLOMEW AND ASSOCIATES
ANNERS · CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

1965 AVERAGE DAILY TRAFFIC



LEGEND

- ▬ FREEWAY
- ▮▮▮▮ EXPRESSWAY
- — MAJOR STREET
- ······ COLLECTOR
- ------ MAJOR HIGHWAY
- ═══ COLLECTOR HIGHWAY
- 2150 1965 AVERAGE DAILY TRAFFIC

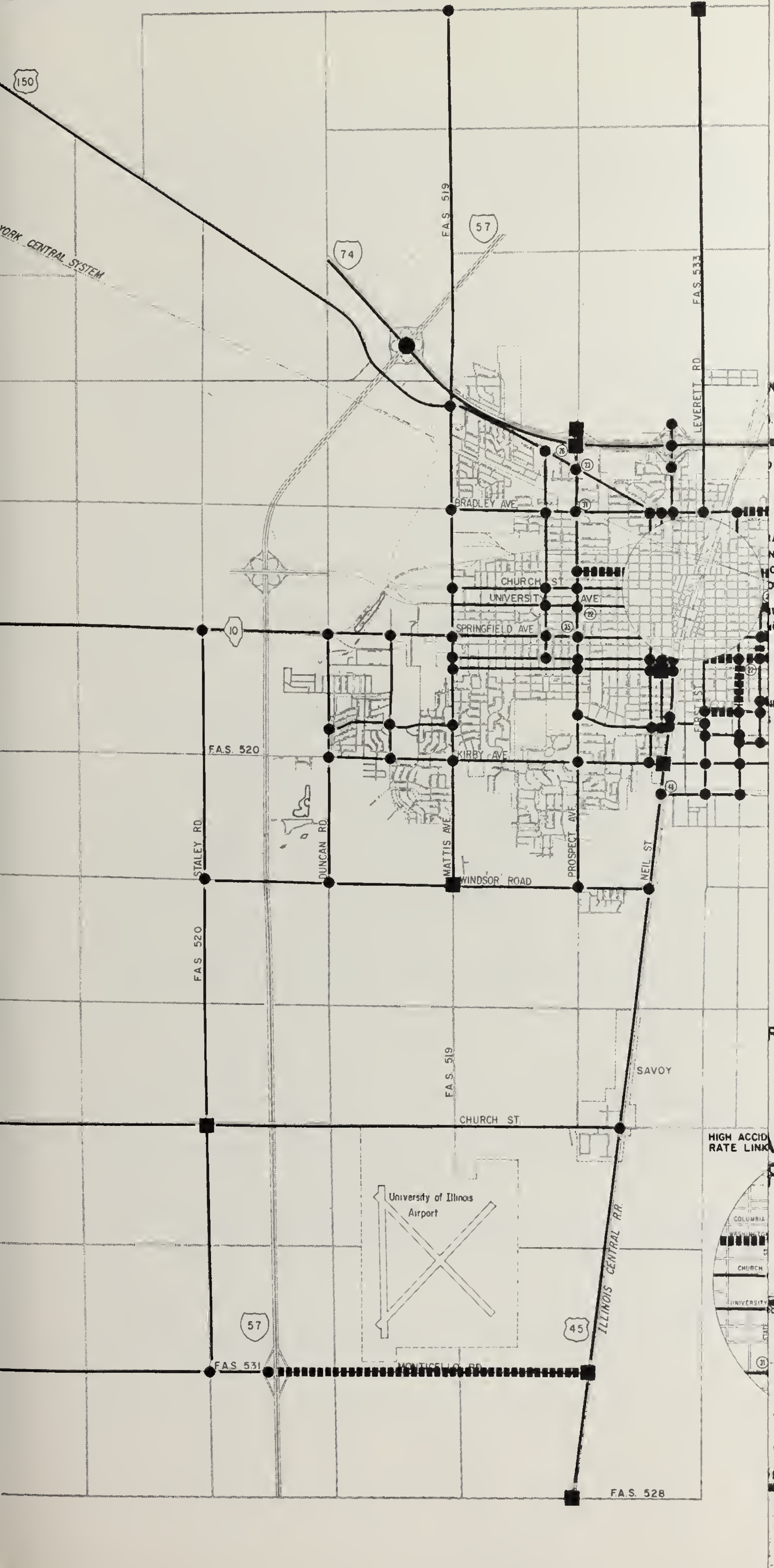
CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

NORTH

PLATE II-7

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS · CIVIL ENGINEERS · LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

CIDENT LOCATION MAP



G E N D

N ACCIDENTS

.436 AND UP*)

(1.480 TO 4.435)

.000 TO 1.479)

INTERSECTION ACCIDENT

● HIGH RATE (0.075 AND UP*)

■ MEDIUM RATE (0.026 TO 0.074)

• LOW RATE (0.000 TO 0.025)

ATES SHOWN ARE AVERAGES OF 1964 AND 1965 RATES
NUMBER OF ACCIDENTS PER 100,000 VEHICLE-MILES FOR
CTION ACCIDENTS AND PER 10,000 VEHICLES FOR
ON ACCIDENTS.

UMBER OF ACCIDENTS IN 1964 AND 1965 AT HIGH ACCIDENT
CY LOCATIONS.

FORMATION PARTLY PROVIDED BY ILLINOIS DIVISION
AND PARTLY OBTAINED FROM LOCAL AGENCIES.

1964 AND 1965
RAGE ACCIDENT RATES

MPAIGN - URBANA
REA TRANSPORTATION
STUDY

NORTH

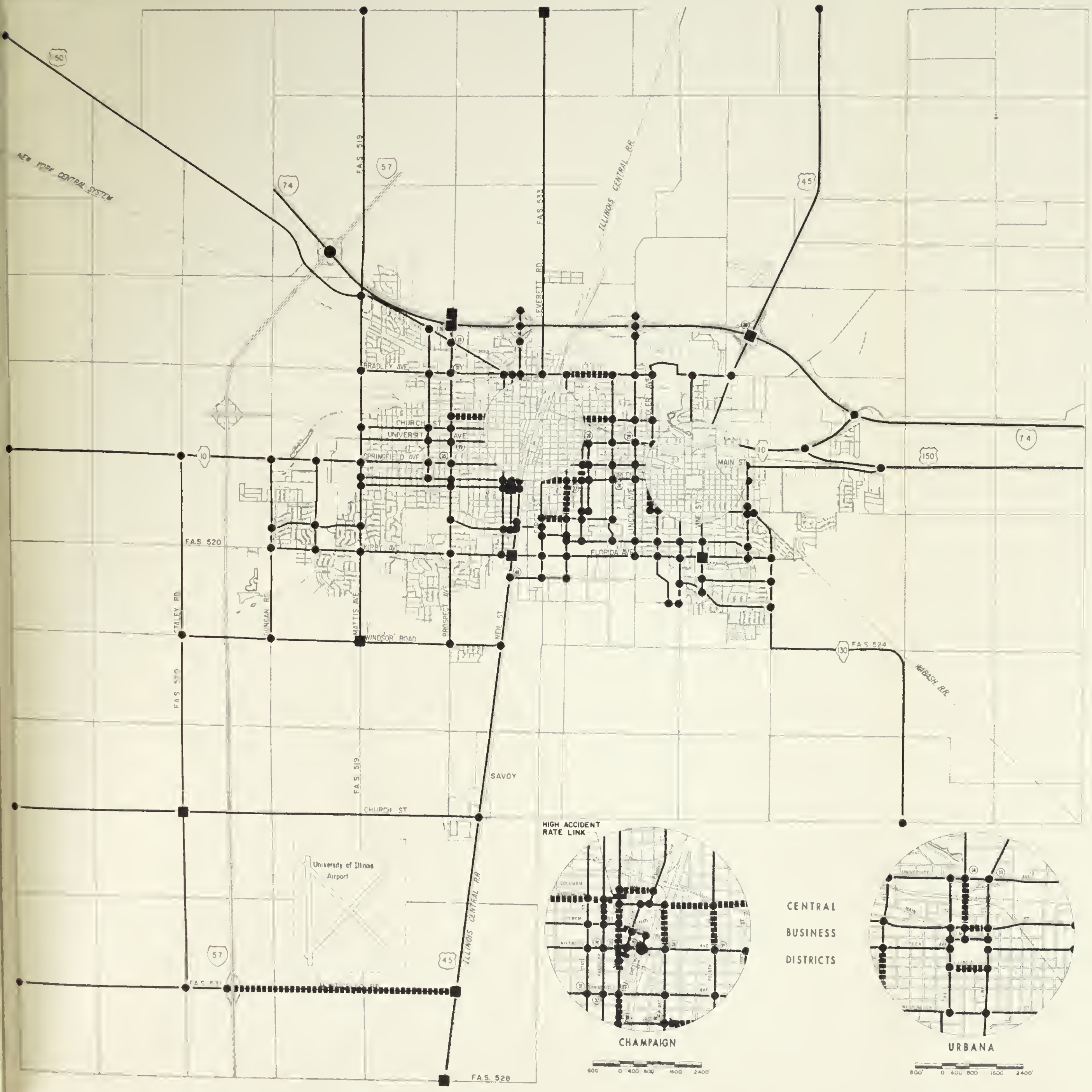
0 800 1600 3200 4800 6400 8000

1965

PLATE II-8

THOLOMEW AND ASSOCIATES
CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

ACCIDENT LOCATION MAP



L E G E N D

STREET SECTION ACCIDENTS

- ▬ HIGH RATE (4.438 AND UP*)
- ▪▪▪▪ MEDIUM RATE (1480 TO 4435)
- — LOW RATE (0.000 TO 1479)

INTERSECTION ACCIDENT

- ● HIGH RATE (0.075 AND UP*)
- ■ MEDIUM RATE (0026 TO 0074)
- • LOW RATE (0.000 TO 0.025)

*NOTE: ACCIDENT RATES SHOWN ARE AVERAGES OF 1964 AND 1965 RATES BASED ON NUMBER OF ACCIDENTS PER 100,000 VEHICLE-MILES FOR STREET SECTION ACCIDENTS AND PER 10,000 VEHICLES FOR INTERSECTION ACCIDENTS.

NOTE: ⑳ TOTAL NUMBER OF ACCIDENTS IN 1964 AND 1965 AT HIGH ACCIDENT FREQUENCY LOCATIONS

ACCIDENT INFORMATION PARTLY PROVIDED BY ILLINOIS DIVISION OF HIGHWAYS AND PARTLY OBTAINED FROM LOCAL AGENCIES

1964 AND 1965
AVERAGE ACCIDENT RATES

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

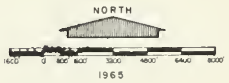


PLATE II-8

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS · CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

space, parks, recreational facilities, schools, urban renewal areas, existing neighborhoods, historical sites, and other community facilities are important environmental factors. It is important not only to preserve and enhance existing environmental factors but also to provide additional open space in anticipation of future development.

Existing, well-established neighborhoods and proposed residential areas should be provided with adequate access to the major road network. Undesirable widening of local and neighborhood streets should be reduced. To the maximum extent possible, disruption of schools and school districts, fire stations, etc., should be avoided; and the appearance of the facility from the viewpoint of the motorist, the pedestrian, and the nearby residents should be considered.

Social and community value factors are also elements of land use and therefore may be generally observed from reviews of the existing land use map, Plate II-3, and future land use forecasts presented later in this report. A more specific delineation of existing and future factors is also presented later in the report under plan development inasmuch as they provide constraints for major street development.

PUBLIC TRANSPORTATION

Public transit service in the study area has been provided by a system of buses that involves Champaign-Urbana bus lines operating within and between the cities of Champaign and Urbana and by the Illi Bus System that serves the University of Illinois. The study area is served with approximately eight weekday buses operating over a routing of approximately 23 miles. Plate II-9 shows the existing bus routes and the service area. Service areas lie within one-fourth to one-half mile of each route; and, in the Champaign-Urbana study area as in most cities, some areas are served by more than one route. The area coverage encompasses the residence of approximately 80,800 persons; thus, transit service is being provided to 86 percent of the population within the study area.(9)

The existing transit system usage in the study area is limited and constitutes a small portion of the daily travel. According to the origin-destination survey data, about 4,400 trips per day or 1.5 percent of the total internal person trips were involved (see Table II-5). Thus, transit trips are an insignificant portion of the total area trips per day.(10)

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(9) See additional details in Interim Report H, Transportation Facilities and Travel Patterns Forecast, Harland Bartholomew and Associates, October, 1969.

(10) See additional details in Interim Report G, Origin-Destination Studies, Harland Bartholomew and Associates, November, 1967.

TABLE II-5

SUMMARY OF 1965 INTERNAL-INTERNAL PERSON TRIPS

Champaign-Urbana Urban Area Transportation Study

Mode	Trips	Percent of Total
Transit Passenger	4,400	1
Auto Passenger	71,000	24
Auto Driver	220,000	73
Other Passengers	6,100	2
TOTAL PERSON TRIPS	301,500	100

FINANCIAL RESOURCES

The sources of revenues for highways and highway-related expenditures are basically from taxes collected by federal, state, and local agencies for highway purposes. The study area revenues are derived from the study area's share of the motor fuel tax, from property taxes collected for highways and related improvements, from State highway expenditures or allotments, and from special assessments in the central cities of Champaign and Urbana.

The financial resource data for the 1959-1963 period are composed of the street, highway, and related expenditures by the State of Illinois; Champaign County; the City of Champaign; the City of Urbana; and Champaign, Hensley, Somer, Tolono, and Urbana Townships. Available expenditures data did not permit the separation of the study area from the county so that expenditures for the study area may be accurately isolated. Similarly, expenditures for those townships (Tolono, Hensley, and Somer), portions of which are outside the study area, are indicated for the entire township rather than the study area portion.

Table II-6, Average Annual Highway Expenditures, summarizes the total and per capita average annual expenditures for highway and related purposes for the 1959-1963 period by the State; Champaign County; the Cities of Urbana and Champaign; and the Townships of Champaign, Hensley, Somer, Tolono, and Urbana. While total expenditures provide a true picture of street and highway and related improvements, only funds available for construction, right-of-way, and engineering would be considered available toward the implementation of improvements recommended by the area transportation study. Table II-7, Funds Expended for Right-Of-Way, Construction, and Engineering, presents the annual funds expended for right-of-way, construction, and engineering.(11)

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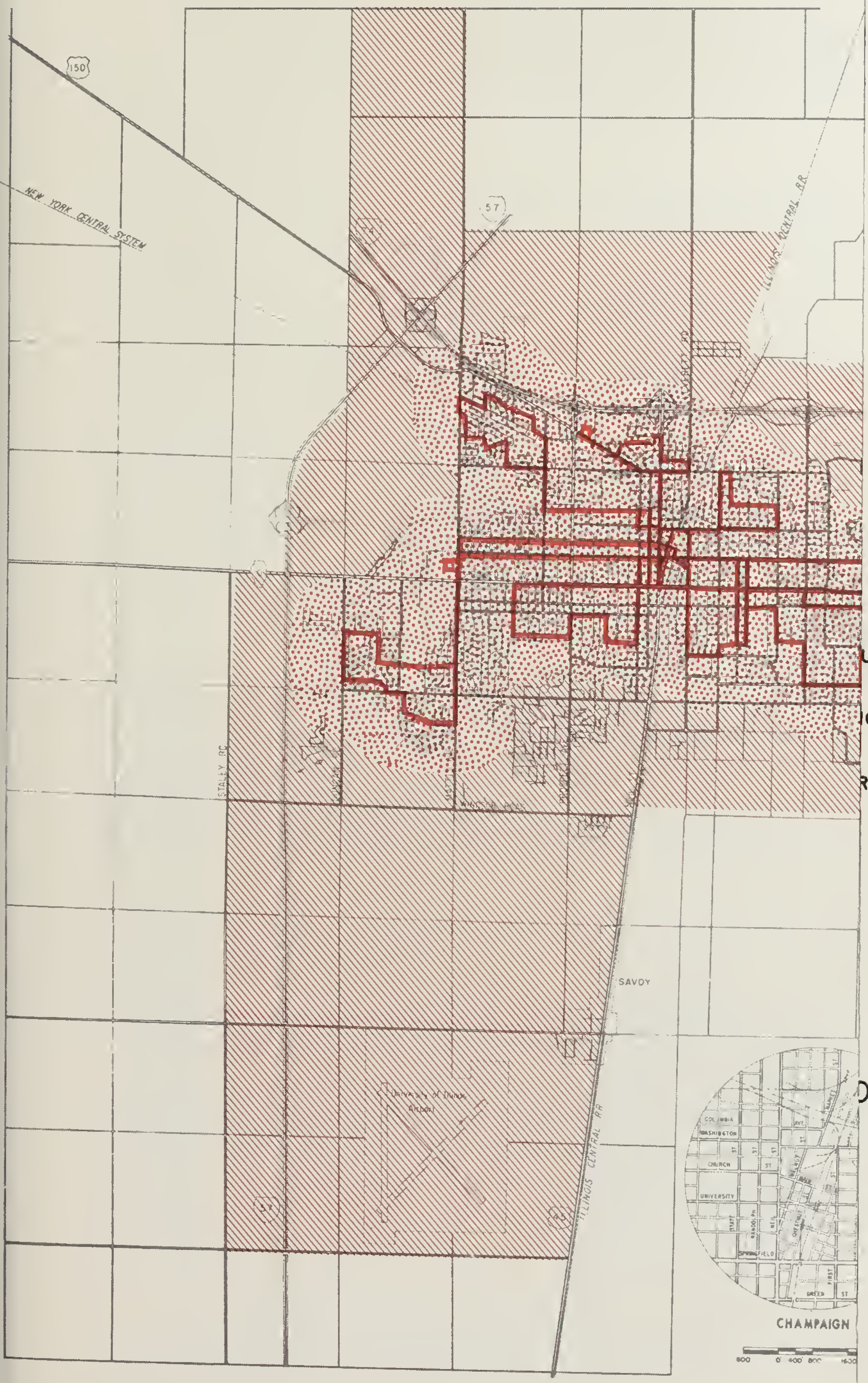
(11) See additional details in Interim Report K, Inventories and Forecasts of Financial Resources, Harland Bartholomew and Associates, February, 1969.

TRANSIT ROUTES AND COVERAGE



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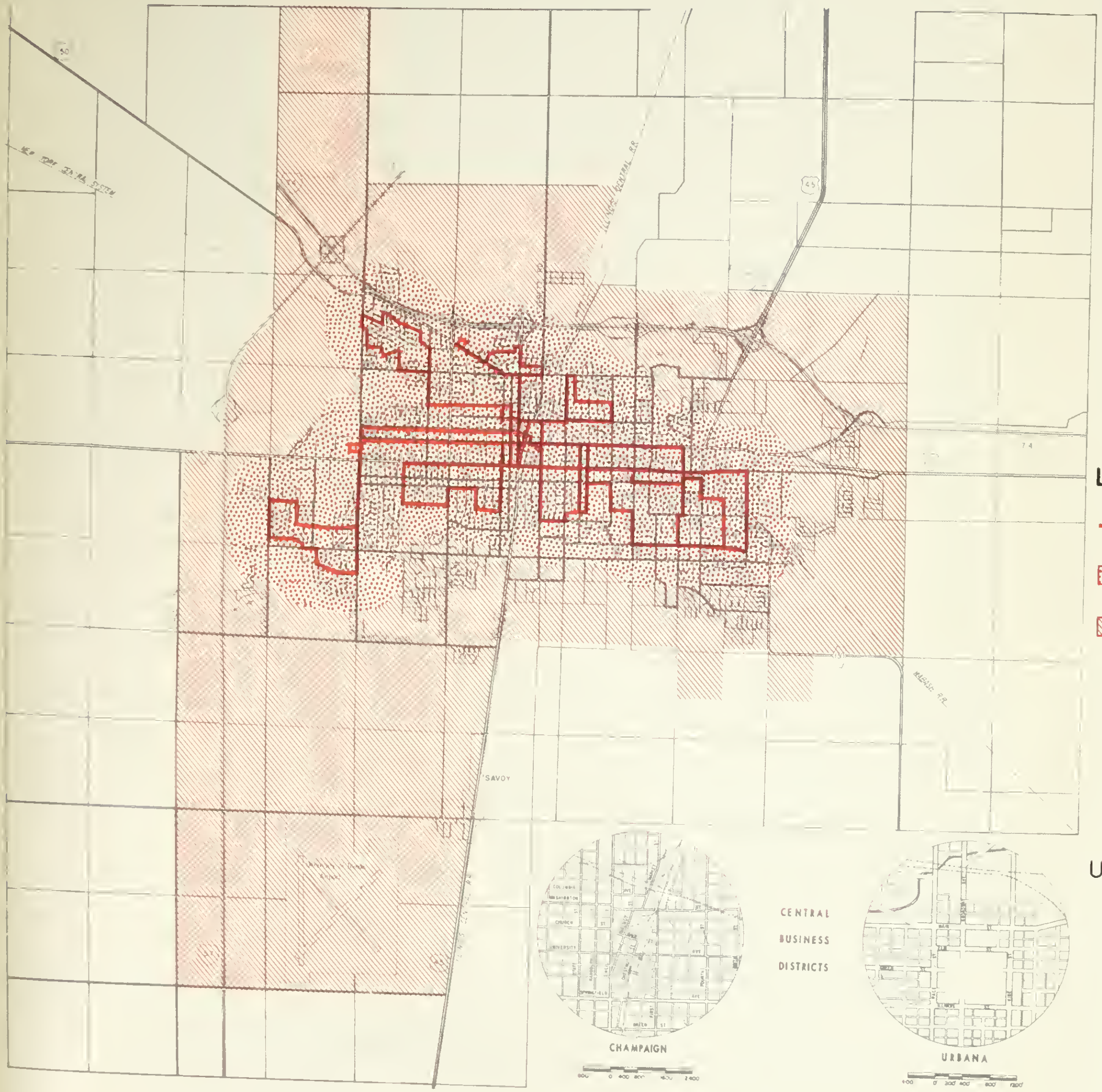
TRANSIT ROUTES AND COVERAGE



LEGEND

- 🟥 EXISTING (1965) TRANSIT ROUTES
- ▨ EXISTING (1965) TRANSIT SERVICE AREA
- ▨ POTENTIAL (1985) TRANSIT SERVICE AREA

CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION
STUDY

NORTH

PLATE II-9

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TABLE II-6

AVERAGE ANNUAL HIGHWAY EXPENDITURES

Champaign-Urbana Urban Area Transportation Study

Source	Total Expenditures 1959-1963	Average Annual Per Capita Expenditures	
		Total 1959-1963	Right-Of-Way Engineering and Construction 1959-1963
State	$4,890,508[1]	36.30	30.20
County	326,119[1]	2.40	1.60
Municipal	2,875,452[2]	36.80	8.20
Township	225,623[3]	21.50	2.00

---

[1] Total for the entire county. The amount spent within the study area is not known.

[2] Total includes $102,714 transferred to other funds and $1,602,128 expended for allied street functions.

[3] Total for all of Champaign, Urbana, Tolono, Hensley, and Somer Townships.

LAWS AND ORDINANCES

This section discusses the inventory and review of existing zoning ordinances, setback requirements, subdivision controls, building codes, and other aspects of laws and ordinances. The advantages and benefits that are obtained from the transportation plan will primarily depend upon the degree that the proposed patterns of land use and population distribution are followed in the future. Of particular importance are zoning and subdivision regulations, but other regulatory measures can also be helpful. The conditions and needs are discussed for each of the four major agencies involved in the study; namely, the cities of Champaign and Urbana, Champaign County, and the University of Illinois.

The comments regarding the adequacy or defects of existing regulations were from answers to a questionnaire developed and submitted to each agency.

TABLE II-7

FUNDS EXPENDED FOR

RIGHT-OF-WAY, CONSTRUCTION, AND ENGINEERING

Champaign-Urbana Urban Area Transportation Study

	1959		1960		1961		1962		1963	
	Expended	%[1]	Expended	%	Expended	%	Expended	%	Expended	%
State[2, 3]	$7,643,860	91.0	$3,188,461	81.5	$1,705,466	69.3	$2,047,331	70.6	$5,765,333	85.3
County[3]	195,143	58.9	294,688	73.9	336,674	75.1	72,525	39.9	152,106	56.6
City of Champaign	270,928	62.4	234,605	46.6	145,205	30.3	220,282	47.7	461,972	64.0
City of Urbana	343,605	50.2	325,913	49.8	1,078,998	83.4	48,675	16.1	48,173	15.9
Central Cities Total	614,533	54.8	560,518	48.4	1,224,203	69.1	268,957	35.2	510,145	49.8
Savoy	--	--	--	--	--	--	577	04.1	272	06.1
Champaign Township	325	00.7	325	00.5	6,313	11.0	492	00.9	7,677	11.0
Hensley Township[4]	270	00.8	220	00.8	948	03.2	331	01.7	2,851	10.0
Somer Township[4]	8,282	16.0	17,133	37.0	2,843	06.0	5,954	12.0	19,435	32.0
Tolono Township[4]	1,659	04.5	1,170	02.0	1,168	03.0	720	15.0	1,265	03.0
Urbana Township	1,868	04.3	265	00.5	395	00.7	11,375	19.0	2,818	04.0
Total Township	12,404	06.0	19,113	08.3	11,667	05.5	18,872	08.5	34,046	13.3
TOTAL	$8,465,940		$4,062,780		$3,278,010		$2,408,262		$6,461,907	

Source: Bureau of Planning, Illinois Division of Highways

[1] Right-of-way, construction, and engineering funds as percent of total expended for highway related purposes.
[2] Includes State Administration expenditures.
[3] Figures shown are for the entire county.
[4] Figures shown are for the entire township.

City of Champaign

Champaign has enjoyed the benefits of zoning for many years, and a comprehensive amended ordinance was adopted in 1965. This recent ordinance also provides zoning controls for property lying within one and one-half miles of the corporate limits--except where the land is also within one and one-half miles of Urbana's corporate limits. Champaign's extraterritorial zoning limit extends to AT and T Road to the south as per Savoy-Champaign agreement. The present zoning ordinance is basically sound and provides adequate controls over land use and intensity of development. Some tightening of regulations would be desirable such as increasing the amount of off-street parking, especially in apartment districts, and requiring adequate vision clearance at street intersections. Encouragement of planned development for large tracts that may not completely conform to all details of the zoning ordinance should also be given.

Champaign has enforced subdivision regulations for many years, which regulations also control new subdivisions within one and one-half miles of the corporate limits. The regulations further control the type and standards of physical improvement--grading, paving, water, sanitary and storm water sewers, etc., in new developments; and city officials carefully supervise these improvements. Generally, the subdivision regulations conform to modern practices; but some changes would be desirable. For example, the types of major streets should be reclassified and new standards established for width of rights-of-way and pavements in accordance with the recommended transportation plan. Likewise, provisions should be made to permit the reviewing agency to require wider rights-of-way at major street intersections so as to accommodate lanes for turning vehicles.

Champaign also has other regulations that help control the standard and character of urban development. The Building Code controls the structural soundness and safety of buildings, and its provisions are generally modern and adequate. The Minimum Housing Ordinance establishes minimum standards for health and safety for both new and existing living facilities and conforms to modern standards and practices. The Traffic Code provides for controls over curb parking, traffic signs, and signals. These conform to modern practices, but some changes will probably be desirable in the future to adjust to changing conditions and practices.(12)

City of Urbana

The City of Urbana has enforced zoning regulations since 1940, and a comprehensive revision of the original ordinance was adopted in 1950. The City has recently adopted an amendment which provides for zoning controls over land lying within one and one-halt miles of the corporate limits--except where such controls are exercised by the City of Champaign. While the districts and regulations therein are logically different than those in the Champaign ordinance, the Urbana ordinance is generally adequate. Further, the possible changes are also similar to those described for the City of Champaign.

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(12) See additional details in Interim Report F, Laws and Ordinances, Harland Bartholomew and Associates, December, 1969.

Urbana has subdivision regulations which also apply to new subdivisions within one and one-half miles of the corporate limits. As in the Champaign regulations, they provide for standards of design and physical improvements. They are basically inadequate and would need revisions badly, but the same changes suggested for the Champaign regulations would be applicable to those of Urbana. However, the City of Urbana is now in the process of preparing a new zoning ordinance which may be adopted in 1970. This undoubtedly would rectify most of the areas of inadequacy in the ordinance as indicated in the comments in the questionnaire.

Urbana also has other regulations similar to those discussed for the City of Champaign. Included are a Building Code, Minimum Housing Standards, and controls over traffic signs and signals. As in Champaign, these generally conform to modern practices; but some future changes will probably be desirable to adjust to changing conditions and practices.(13)

Savoy

This is the only other incorporated community within the study area. Savoy has adopted and is enforcing zoning regulations which also control land use and intensity of development within one and one-half miles of its corporate limits. The ordinance appears adequate for current needs, but the district map may eventually need to be adjusted to trends of urban development within the study area.(14)

Champaign County

The majority of the study area lies within the unincorporated portion of Champaign County. As prevails in so many predominantly rural counties within the state, very few regulations are available to guide and control urban development.

A zoning ordinance was prepared for the unincorporated portions of Champaign County in 1958. However, because of strong opposition to the proposed regulations by citizens living in the rural portions of the county, it was never adopted. It is understood that efforts may again be made to adopt county zoning regulations in about two years. Since so much of the county is unincorporated, there is a serious need for sound zoning control within these areas. There is, however, some compensation in the fact that the three incorporated communities have adopted zoning controls within one and one-half miles of their corporate limits. While these control much of the area that is currently being urbanized, there is much area lying beyond these boundaries that needs the protection of sound zoning regulations. The State of Illinois has recently adopted legislation authorizing townships to adopt and enforce zoning regulations. The adoption of such ordinances within the townships near the two larger cities would afford zoning control over much of the urbanizing area. However, this would provide zoning control by several public agencies with the possibilities of substantial differences in the type of the regulations and consistency of enforcement. It would be more desirable for these areas to be controlled by county zoning regulations.

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(13) Ibid.

(14) Ibid.

Champaign County has recently adopted (June, 1969) and is enforcing subdivision regulations. These conform to modern practices and are basically adequate. As was suggested for the City of Champaign, the regulations regarding rights-of-way and pavement widths should be related to the proposed highway system of the transportation plan whenever it is officially adopted. Consideration should also be given to permitting the reviewing agencies to require rights-of-way widening at major street intersections. County officials indicate the need for more trained personnel to supervise installation of physical improvements in new subdivisions.

The County has also adopted regulations for driveway or access controls and utilizes State statutes for effecting most highway improvements. However, it has no building code nor minimum housing standards.(15)

University of Illinois

As a State institution, the University does not have legislative authority as cities and counties do. Further, its improvements are not controlled by local regulations. The University comprises such a large area of intensive development and is such an important factor in the local economy that close coordination of its improvements and controls with local plans and regulations should be continuously maintained. This coordination is especially essential with the comprehensive transportation plan now nearing completion.

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(15) Ibid.

The University has prepared a master plan to guide future development of its physical plant. A comprehensive parking study was prepared, and the first free standing parking structure is now under construction. It has also adopted parking regulations as well as regulations controlling the use of motorcycles and bicycles. The Chicago code is used as a guide for standards in the design and construction of University buildings.(16)

TERMINAL AND TRANSFER FACILITIES

Terminal and transfer facilities are defined as facilities at the origins and destinations of all types of trips, involving the movement of people and goods which provide for loading and unloading operations and may, in addition, provide for the temporary storage of the transportation equipment. Since a trip is considered to end when transfer is made from one transportation mode to another, facilities for such transfers are included in the above definition. This section, however, discusses only parking and truck loading and unloading facilities in the Urbana Central Business District, the University of Illinois area, and the Champaign Central Business District.

The inventory of parking facilities in the Urbana CBD was conducted by the City of Urbana. The inventory for the University campus was provided by the University, while the inventory of the remaining parking in the University areas was compiled by the Illinois Division of Highways. A separate parking study for the City of Champaign in early 1966 provided the inventory for the Central Business District.

The inventory revealed that there were 2,461, 16,019, and 2,872 on- and off-street parking spaces in the Urbana CBD, University of Illinois area, and the Champaign CBD, respectively. Table II-8 shows the results of the parking space inventory. Plates II-10A, II-10B, and II-10C present the existing parking facilities in the Champaign CBD, the Urbana CBD, and University of Illinois area, respectively.

Loading and unloading in the main business section (Lincoln Square) of the Urbana CBD is properly provided for by specified loading zones within the parking area. However, certain areas outside the Lincoln Square have limited loading and unloading facilities. Some loading and unloading facilities are provided on the campus of the University of Illinois. Generally, there were no major problems to traffic movement on campus that may be related to loading and unloading terminals. In the Champaign CBD, loading and unloading does not constitute a major undesirable influence on the movement of traffic in the area.

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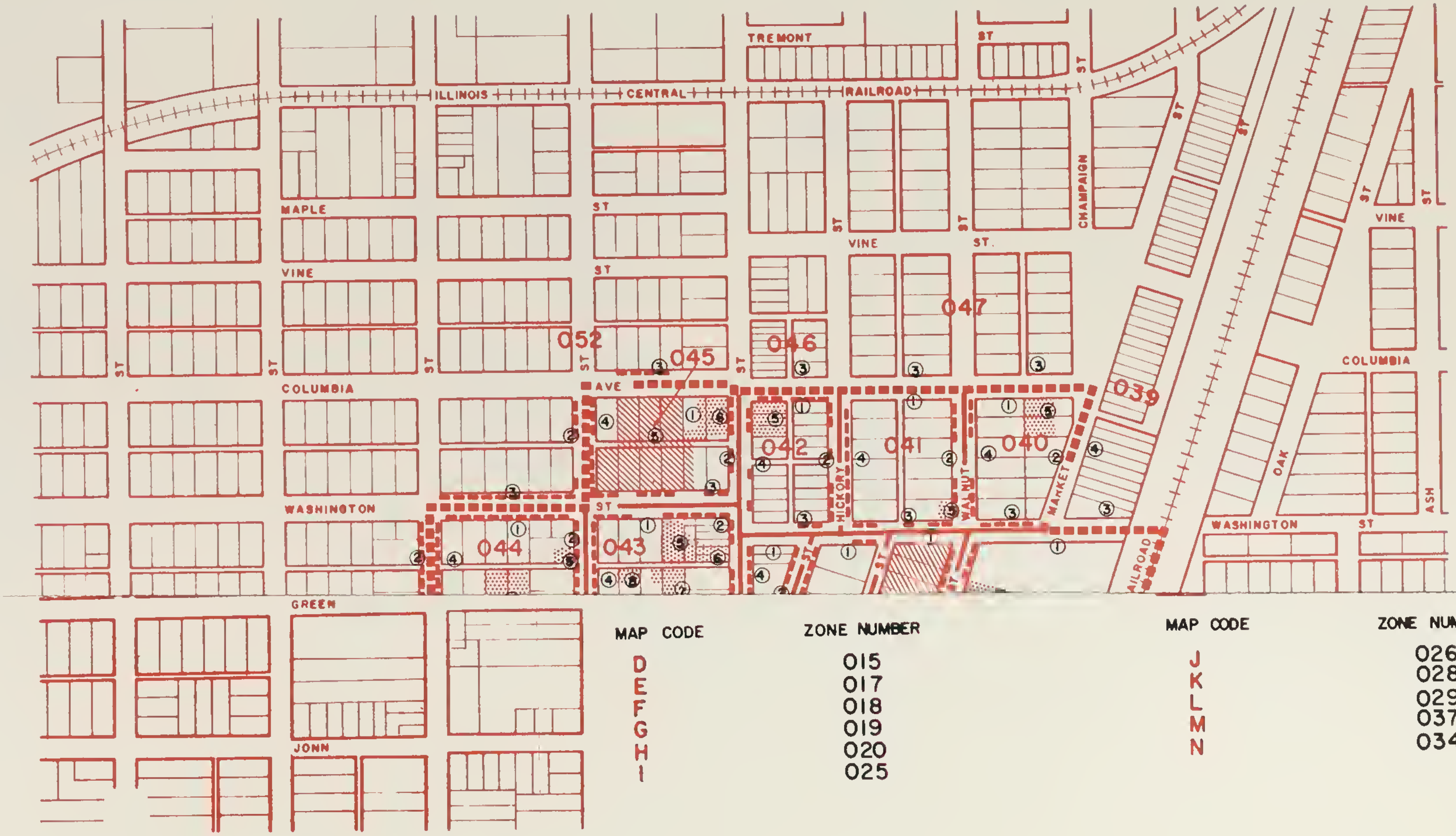
(16) Ibid.

EXISTING PARKING FACILITIES

CHAMPAIGN, ILLINOIS
CENTRAL BUSINESS DISTRICT & VICINITY
1965



MAP CODE	ZONE NUMBER
D	015
E	017
F	018
G	019
H	020
I	025

MAP CODE	ZONE NUMBER
J	026
K	028
L	029
M	037
N	034

PLATE II-10A

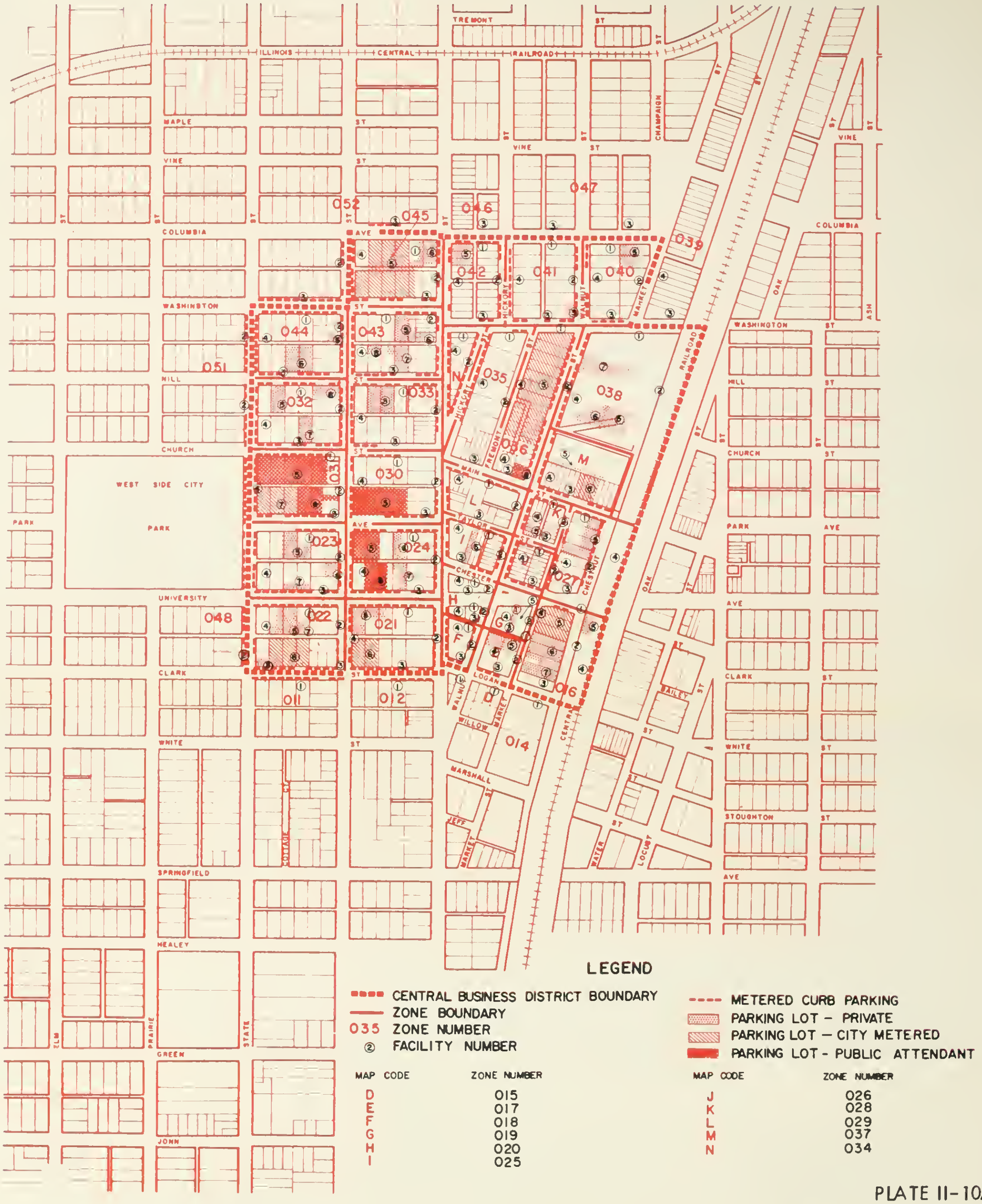
NOTE: PARKING INVENTORY CONDUCTED
MAY, 1966

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

CITY PLANNING DEPARTMENT
0 200 400 600
CHAMPAIGN, ILLINOIS

EXISTING PARKING FACILITIES

CHAMPAIGN, ILLINOIS
CENTRAL BUSINESS DISTRICT & VICINITY
1965



LEGEND

▬ ▬ CENTRAL BUSINESS DISTRICT BOUNDARY
— ZONE BOUNDARY
035 ZONE NUMBER
② FACILITY NUMBER

- - - METERED CURB PARKING
▨ PARKING LOT – PRIVATE
▨ PARKING LOT – CITY METERED
■ PARKING LOT - PUBLIC ATTENDANT

MAP CODE	ZONE NUMBER	MAP CODE	ZONE NUMBER
D	015	J	026
E	017	K	028
F	018	L	029
G	019	M	037
H	020	N	034
I	025		

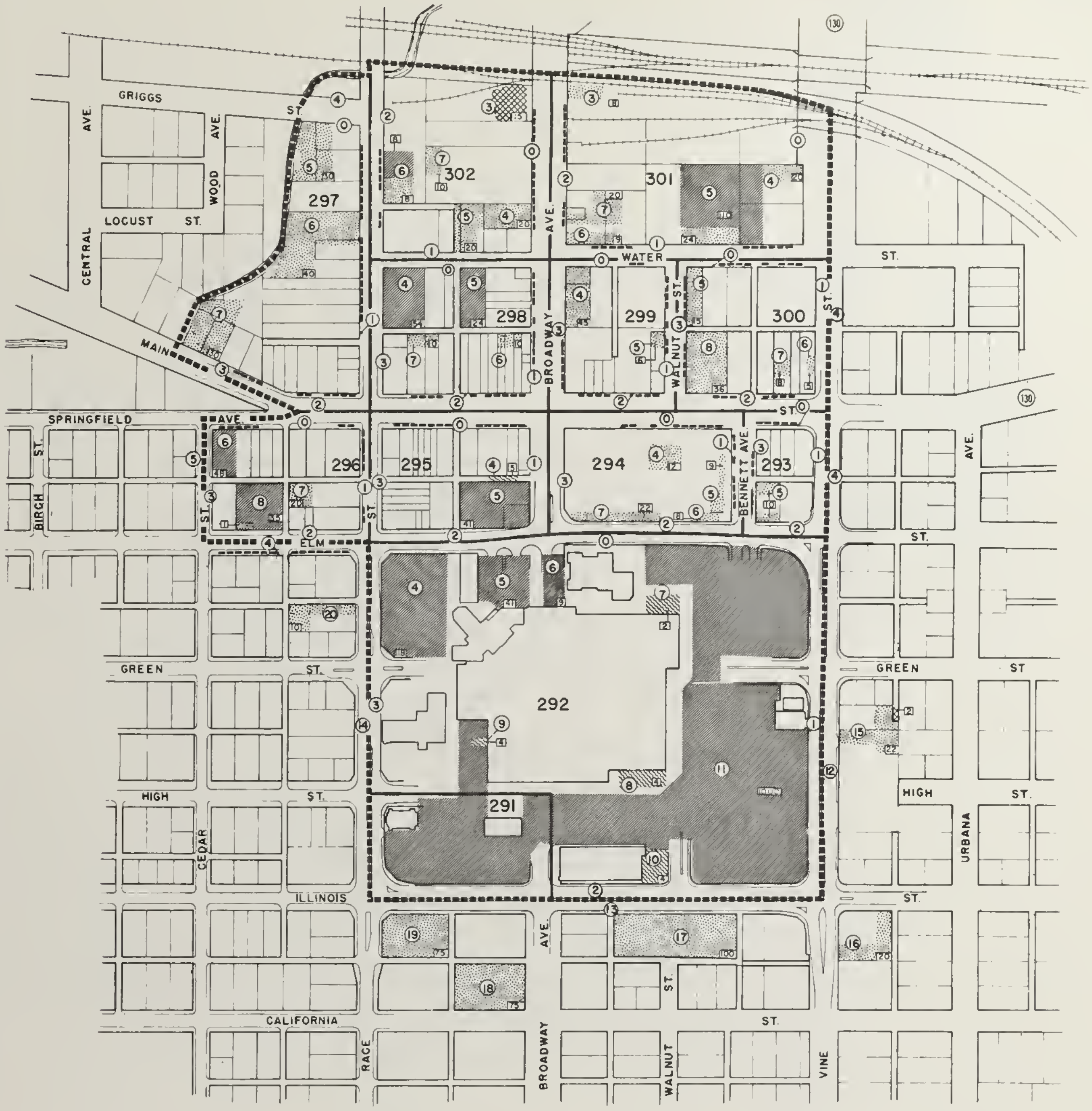
PLATE II-10A

NOTE: PARKING INVENTORY CONDUCTED MAY, 1966

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

CITY PLANNING DEPARTMENT
CHAMPAIGN, ILLINOIS

EXISTING PARKING FACILITIES



NOTE: PARKING INVENTORY CONDUCTED SEPTEMBER, 1967

URBANA, ILLINOIS

CENTRAL BUSINESS DISTRICT

LEGEND

▨ PARKING LOT—METERED
▩ PARKING LOT—UNMETERED
░ PRIVATE LOT
▧ TRUCK LOADING
292 ZONE NUMBER

---- METERED CURB PARKING—PARALLEL
000 NUMBER OF PARKING SPACES IN FACILITY
◎ FACILITY NUMBER
■■■■ PARKING STUDY BOUNDARY
— ZONE BOUNDARY

1965

0 100 200 300 400 500 FEET

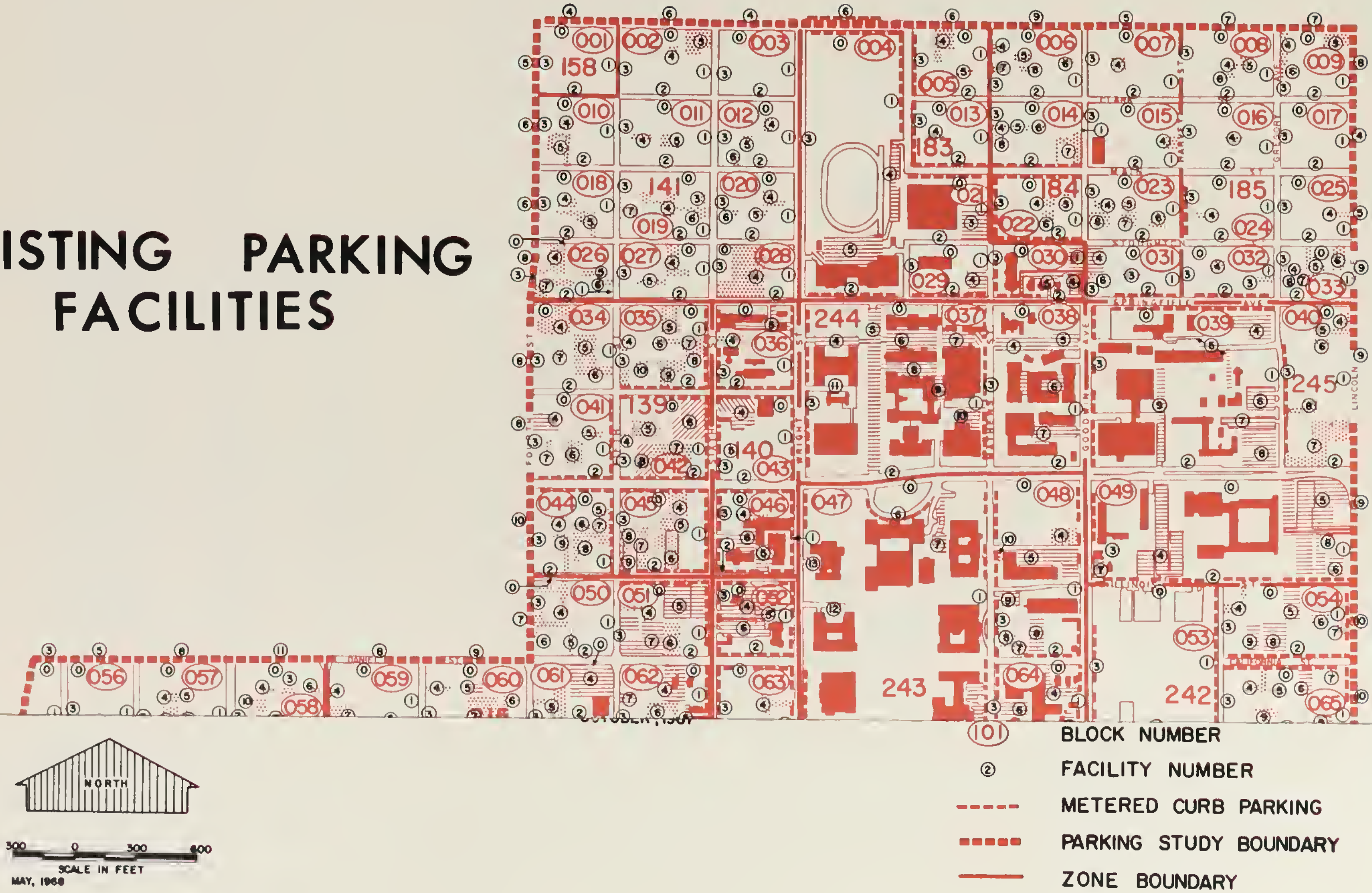
HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS TENNESSEE

PLATE II-10B

CHAMPAIGN - URBANA, ILLINOIS

UNIVERSITY OF ILLINOIS AREA

EXISTING PARKING FACILITIES



(101) BLOCK NUMBER

② FACILITY NUMBER

- - - - - METERED CURB PARKING

▬▬▬ PARKING STUDY BOUNDARY

——— ZONE BOUNDARY

▨ PARKING LOT - METERED

▤ PARKING LOT - UNMETERED

░ PARKING LOT - PRIVATE

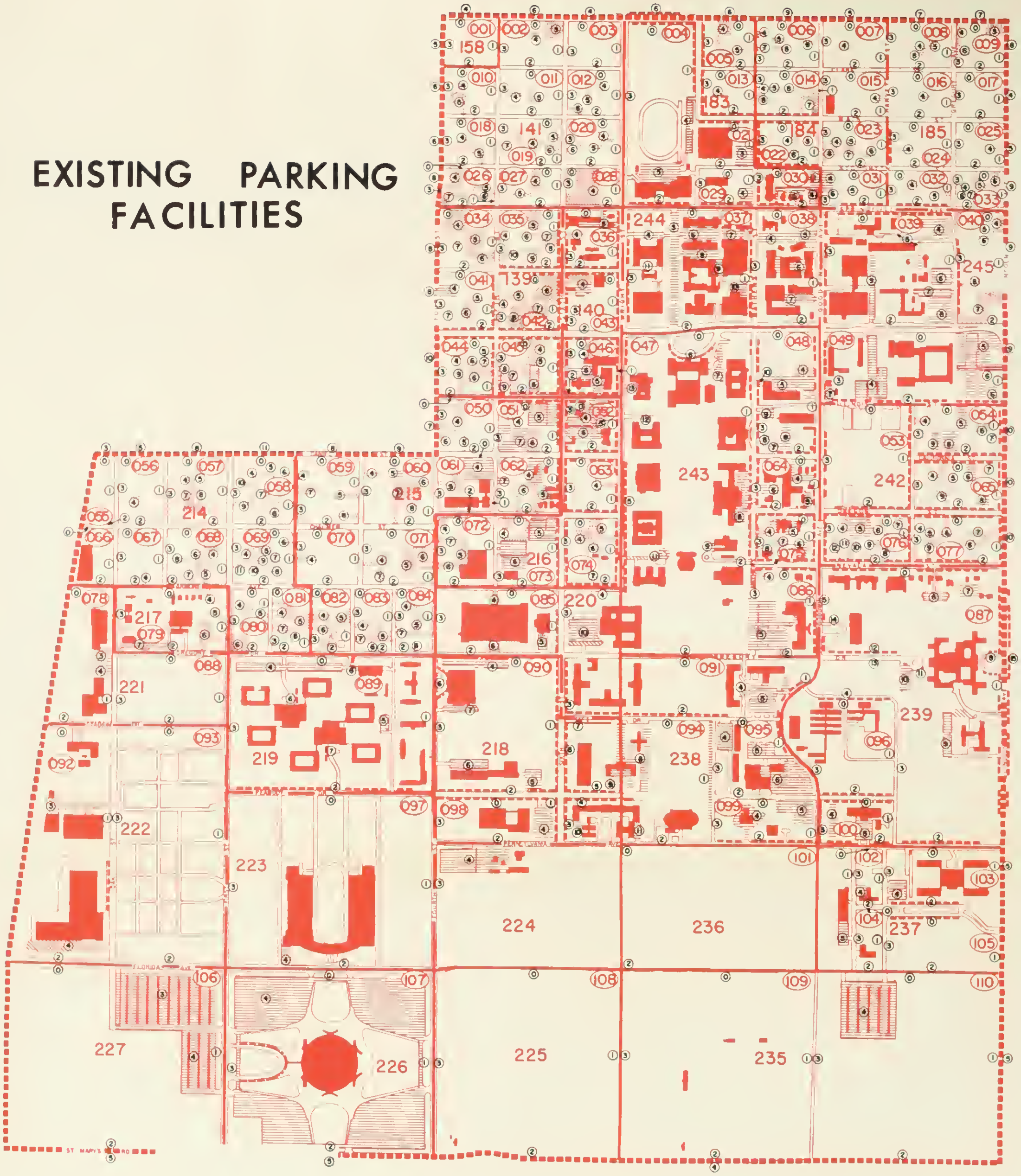
PLATE II-10C

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

CHAMPAIGN - URBANA, ILLINOIS

UNIVERSITY OF ILLINOIS AREA

EXISTING PARKING FACILITIES



NOTE: PARKING INVENTORY CONDUCTED OCTOBER, 1967

300 0 300 600
SCALE IN FEET

MAY, 1968

LEGEND

215	ZONE NUMBER
(101)	BLOCK NUMBER
②	FACILITY NUMBER
- - - -	METERED CURB PARKING
■■■■	PARKING STUDY BOUNDARY
——	ZONE BOUNDARY
▨	CITY METERED
▨	PARKING LOT - METERED
▤	PARKING LOT - UNMETERED
▤	PARKING LOT - PRIVATE

PLATE II-10C

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TABLE II-8

PARKING INVENTORY DATA

Champaign-Urbana Urban Area Transportation Study

Jurisdiction	METERED On-Street	METERED Off-Street	METERED Total	UNMETERED On-Street	UNMETERED Off-Street	UNMETERED Total	Total
Urbana CBD	198	1,488	1,686	--	775	775	2,461
University of Illinois	1,838	331	2,169	2,551	11,299	13,850	16,019
Champaign CBD	794	742	1,536	129	1,207	1,336	2,872
TOTAL	2,830	2,561	5,391	2,680	13,281	15,961	21,352

Some businesses in the Champaign CBD core are not provided with off-street loading and unloading facilities, and at times these businesses could utilize portions of the traffic lanes as a loading zone. However, it is necessary that when the CBD is redeveloped sufficient off-street loading and unloading facilities be provided.

A summary of the inventoried parking demand and supply is presented in Table II-9.

Table II-9 indicates that the 1965 parking demand is less than the available parking spaces inventoried in 1967 and considered available in 1965. The tabulations are for the selected areas as a whole and indicate that of the available spaces only 45 percent were occupied in the Urbana Central Business District, 76 percent in the University of Illinois area, and 55 percent in the Champaign Central Business District. From the general guide to overall space demand and availability, it cannot be concluded that there were no parking deficiencies at the time of the inventory. Since walking distance is a major factor in the desirability of a parking facility, one large parking area (such as the Lincoln Square parking lot) cannot always be considered to offset deficiencies which may be at a great distance from this parking area. Of course, the maximum walking distance is dependent upon many variables such as desirability of the shopping area, maximum walking distance of other shopping areas, length of time shoppers stay in the area, cost of parking, and ease of finding a parking space.(17)

ORIGIN-DESTINATION SURVEY

Traffic volume counts alone do not provide sufficient information for determining the proper location and design of streets and highways. Traffic volume counts show where

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(17) See additional details in Interim Report J, Terminal and Transfer Facilities Inventory and Forecast, Harland Bartholomew and Associates, January, 1969.

TABLE II-9

SUMMARY OF PARKING INVENTORY AND DEMAND

Champaign-Urbana Urban Area Transportation Study

Area	1967 Spaces Available	1965 Demand
Urbana CBD	2,461	1,103
University of Illinois	16,019	12,100
Champaign CBD	3,268[1]	1,786

---

[1] Spaces available in 1966.

people are forced to travel due to existing street facilities but do not show where people actually desire to travel. A comprehensive knowledge of the origins and destinations of the movements of people and materials establishes an accurate basis for a planning and improvement program. Such information is currently collected by means of the origin-destination traffic survey, which consists of interviewing motorists in order to determine where each trip started and ended. The procedures utilized in the origin-destination (O-D) traffic survey in the Champaign-Urbana area followed the basic guidelines in the "Manual of Procedures for Home Interview Traffic Studies," U.S. Bureau of Public Roads, 1954.

A main purpose of an origin-destination survey is to obtain reliable information concerning travel desires so that the most desirable plan can be provided for movements of persons and goods. The origin-destination data obtained for the Champaign-Urbana Urban Area Transportation Study area provided information regarding travel patterns within, into, out of, and through the study area. Included in these facts are the following:

1. Where people go regardless of which route they follow.

2. How they travel--by private automobile, public transit, etc.

3. When they travel--what hour of the day.

4. Why they travel--work, shop, recreation, home or other purposes.

The above facts are determined by interviewing an adequate sample of the population of the area. A 12.5 percent home interview sample was selected. Truck and taxi trip data were obtained by interviewing operators of 25 percent of the trucks garaged within the internal study area and 50 percent of the taxicabs. Eleven external stations at the study area cordon were utilized to interview 25 to 50 percent of the traffic entering and leaving the study area. The roadside interview operations at each location ranged from a minimum of 8 hours to a maximum of 24 hours.

The data from the home interview survey, truck and taxi surveys, and the external survey were then expanded to 100 percent sample for an average weekday travel and checked by actual ground counts. The final verified data become a permanent record and will substantially reduce future needs of data gathering for continuing planning.

Many tabulations of trips and trip data are prepared from an O-D survey for use in transportation planning. These tabulations include trips by purpose, time of day, mode, origin, and destination, as well as listings of types of parking, average vehicle occupancies, population, and employment.

Trip statistics determined in the internal surveys and the external survey are summarized below. For an average weekday in 1965 in the Champaign-Urbana study area, there were:

1. 334,677 person trips made entirely within the study area by residents of the area.

2. 253,651 internal vehicle trips, of which 219,932 are auto driver trips.

3. 29,439 internal truck trips.

4. 4,280 taxi (vehicle) trips within the study area.

5. 32,203 vehicular trips between the study area and points outside the external cordon.

6. 5,107 vehicle trips not desiring to stop in the area (through trips).

7. 4,221 transit passenger trips and 4,487 school bus trips.

The predominant mode of travel in the Champaign-Urbana area is by automobile. About 97 percent of the person trips (internal-internal) are made as auto drivers or auto passengers. Table II-10 summarizes the trip purpose of automobile travel on a typical day while Table II-11 presents a summary of transit passenger trips by purpose. Transit and school buses handle about 3 percent of the total internal person trips.

Of all motor vehicle trips in the study area on a typical day, 1.7 percent were through trips not desiring to stop in the area. Through trips accounted for 12.1 percent of the total external trips. Table II-12 presents a summary of the three basic types of motor vehicle trips. For an area of approximately 94,000 population, these percentages are reasonable.(18)

MATHEMATICAL TRAFFIC MODEL DEVELOPMENT

Thorough analyses of the where's and why's of existing travel in the Champaign-Urbana transportation area provide a basis for forecasts of future movements of persons and goods. A detailed, yet rapid and economic, procedure is desirable in the analysis and the forecast of travel data. The use of mathematical expressions, often referred to as mathematical traffic models, to meet these requirements has become a useful tool in transportation planning. There are a number of traffic model techniques in use, and each has certain advantages as well as certain limitations when compared to other techniques. The best mathematical expression technique for a particular circumstance depends on the availability of travel and planning data suited for application in the model development. In general, mathematical model techniques for traffic estimation follow similar theories and approaches that vary primarily in specific detail of development or application. The primary objective of any technique is to provide a mathematical expression that will reproduce present traffic volumes and provide a tool with which estimates of future volumes may be made for different land use configurations.

The development of a traffic model involves a detailed analysis of existing travel patterns as reported in the origin-destination survey in order to establish a series of mathematical expressions that can adequately reproduce the observed traffic. The series of mathematical expressions incorporate a number of planning data summarizing known conditions such as population, dwelling units, land uses, and other area characteristics.

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(18) See additional details in Interim Report G, Origin-Destination Studies, Harland Bartholomew and Associates, November, 1967.

TABLE II-10

TRIP PURPOSE - INTERNAL SURVEY

Auto Drivers

Champaign-Urbana Urban Area Transportation Study

PURPOSE FROM	PURPOSE TO											
	0	1	2	3	4	5	6	7	8	9	TOTAL	PER-CENT
0 Home	--	16,928	12,265	2,358	6,271	13,911	79	1,188	13,139	14,168	80,307	36.6
1 Work	15,650	4,035	3,170	539	180	973	67	4,707	2,211	1,816	33,348	15.2
2 Personal Business	11,492	948	3,126	185	179	915	--	236	1,580	520	19,181	8.7
3 Medical-Dental	2,076	189	221	211	27	228	--	41	370	93	3,456	1.6
4 School	5,546	231	461	115	279	475	--	527	389	450	8,473	3.9
5 Social-Recreation	15,339	125	441	159	123	2,026	--	202	752	620	19,787	9.0
6 Change Mode	120	45	28	--	--	--	--	--	28	--	221	0.1
7 Eat	1,128	3,473	519	90	518	458	--	--	444	487	7,117	3.2
8 Shop	16,273	515	1,671	174	220	1,621	17	3,641	718	25,307	25,307	11.5
9 Serve Passenger	11,777	2,305	1,489	488	918	1,380	18	467	1,509	2,121	22,472	10.2
TOTAL	79,401	28,794	23,391	4,319	8,715	21,987	181	7,825	24,063	20,993	219,669	
PERCENT	36.1	13.1	10.7	2.0	4.0	10.0	0.1	3.6	10.9	9.5		100.0

TABLE II-11

TRIP PURPOSE - INTERNAL SURVEY

Transit Passenger

Champaign-Urbana Urban Area Transportation Study

PURPOSE FROM	PURPOSE TO											
	0	1	2	3	4	5	6	7	8	9	TOTAL	PER-CENT
0 Home	--	268	33	61	1,187	50	8	--	68	--	1,675	40.0
1 Work	161	--	10	--	--	--	10	10	9	10	210	5.1
2 Personal Business	44	--	8	--	--	--	--	--	24	--	76	1.8
3 Medical-Dental	53	--	--	--	--	--	--	--	--	--	53	1.3
4 School	1,106	8	--	--	53	10	27	286	9	--	1,499	35.8
5 Social-Recreation	60	--	8	--	--	8	--	16	--	--	92	2.3
6 Change Mode	26	32	16	--	16	8	8	--	8	--	114	2.8
7 Eat	10	10	--	--	244	8	--	--	--	--	272	6.5
8 Shop	128	--	18	--	--	--	--	--	17	--	163	3.9
9 Serve Passenger	--	21	--	--	--	--	--	--	--	--	21	0.5
TOTAL	1,588	339	93	61	1,500	84	53	312	135	10	4,175	
PERCENT	38.0	8.1	2.3	1.5	35.8	2.0	1.3	7.5	3.3	0.2		100.0

TABLE II-12

SUMMARY OF 1965 DAILY MOTOR VEHICLE TRIPS

Champaign-Urbana Urban Area Transportation Study

Type	Number	Percent
Internal-Internal	253,853	87.2
Internal-External	32,213	11.1
External-External	5,107	1.7
TOTAL	291,173	100.0

These data are all grouped by analysis zones for computational purposes. From the series of mathematical expressions analyzed, the best estimating equations are chosen for use in calculating future travel patterns.

TRIP GENERATION ANALYSES

Mathematical models for the Champaign-Urbana urban area were developed in two parts: motor vehicle trip generation and motor vehicle trip distribution. Trip generation analyses involved a determination of the number of trips originating in (produced) or destined (attracted) to each zone in the study area. Trip distribution analyses involve the procedure for connecting trips produced in one zone to trip attractions in each other zone in the study area. Models were developed for five trip purposes of internal trips and for the internal end of the internal-external trips. Through trips were projected separately on a growth factor basis. The five trip purposes (for internal trips) are: home-based work, home-based shop, home-based other, non-home-based (including taxi), and trucks.

The trip generation analyses involved the use of multiple linear regression techniques wherein trips generated (produced or attracted) in a particular area are related to a series of indicators or independent variables. Table II-13 provides a summary of data of the dependent variables (motor vehicle trip productions or attractions) for the entire study area. Table II-14 presents the forty (40) independent variables that were considered in the development of trip generation models. The independent variables pertain to the land use and socio-economic characteristics of the study area. To be included in a trip generation model, the independent variable has to meet the criteria of being easy to inventory and to forecast and to have a cause and effect relationship to the dependent variable considered.

TABLE II-13

VEHICLE TRIPS BY PURPOSE FOR GENERATION ANALYSIS

Champaign-Urbana Urban Area Transportation Study

	Home-Based			Non-Home Based	Truck	Total Internal	Internal-External	Total Trips
	Work	Shop	Other					
Trips	32,506	29,244	97,925	64,267	29,911	253,853	33,344	287,197
% of Internal Trips	12.8	11.5	38.6	25.3	11.8	100.0	--	--
% of Total Trips	11.3	10.2	34.1	22.4	10.4	88.4	11.6	100.0

A major objective of the generation model for both trip productions and attractions is to produce mathematical expressions that will express the trips as a function of the characteristics of the area. In this regard, the University of Illinois campus area exhibited generation characteristics for the internal-external attraction model different than the remainder of the area. For this reason, a separate equation was developed for internal-external attractions in the University area. Also, portions of the study area are at the present time predominantly rural in character. Since the generation equations must reflect urban travel characteristics, these rural areas were excluded from the generation analyses.

The selection of the mathematical expressions to be used in the forecast was based upon an evaluation of the variables included and the various statistics regarding the equation. Several hundred different mathematical expressions were evaluated in the selection process. Table II-15 presents the selected equations for use in the forecast of future trips for the area. These equations represent the selection for both the general area and the University of Illinois.(19)

TRIP DISTRIBUTION ANALYSES

The trip distribution model used in these analyses involved a standard technique employed in many transportation studies and is referred to as a gravity model. Details of the technique are described in "Calibrating and Testing a Gravity Model for Any Size Urban Area," U.S. Bureau of Public Roads, October, 1965.

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(19) See additional details in Interim Report E, Traffic Model and Assignment Techniques, Harland Bartholomew and Associates, June, 1967.

TABLE II-14

INDEPENDENT VARIABLES FOR TRIP GENERATION MODELS

Champaign-Urbana Urban Area Transportation Study

Name	Variable Number
Population	1
Dwelling Units	2
Vehicle Registration	3
Distance to Champaign CBD	4
Distance to Urbana CBD	5
Total Income	6
Total Area Acreage	7
Total Residential Acreage	8
Household Units Acreage	9
Dormitories, Hotels, Etc., Acreage	10
Total Manufacturing Acreage	11
Nondurable Manufacturing Acreage	12
Durable Manufacturing Acreage	13
Total Transportation, Commercial, and Utilities Acreage	14
Truck and Taxi Terminals Acreage	15
Other Transportation, Commercial, and Utilities Acreage	16
Retail Sales and Wholesale Trade Acreage	17
Total Services Acreage	18
Educational Services Acreage	19
Other Services Acreage	20
Total Cultural, Entertainment, Recreation, and Parks Acreage	21
Parks Acreage	22
Other Cultural, Entertainment, and Recreation Acreage	23
Resources, Production, Extraction and Agricultural Acreage	24
Undeveloped Land and Water Acreage	25
Retail Sales and Wholesale Trade Employment	26
Manufacturing Employment	27
Total Service Employment	28
Educational Employment	29
Other Service Employment	30
Total School Enrollment	31
Grades 1-8 Enrollment	32
Grades 9-12 Enrollment	33
Over Grade 12 Enrollment	34
Retail Sales and Wholesale Trade Employment plus Service Employment	35
Total Employment	36
Manufacturing Employment (from O-D Survey)	37
Retail and Wholesale Employment (from O-D Survey)	38
Service Employment (from O-D Survey)	39
Total Employment (from O-D Survey)	40

TABLE II-15

SUMMARY OF SELECTED TRIP GENERATION EQUATIONS

Champaign-Urbana Urban Area Transportation Study

1. Home-Based Work Trip Productions (Auto) =
   1.04684 (Vehicle Registration)

2. Home-Based Shopping Trip Productions (Auto) =
   0.95393 (Vehicle Registration)

3. Home-Based Other Trip Productions (Auto) =
   3.12174 (Vehicle Registration)

4. Home-Based Work Trip Attractions (Auto) =
   0.74505 (Total Employment)

5. Home-Based Other Trip Attractions (Auto) =
   0.87744 (Vehicle Registration) + 0.63905 (Grades 9-12 Enrollment) + 1.88252 (Retail and Wholesale Employment) + 1.65908 (Service Employment)

6. Non-Home-Based Productions or Attractions (Auto and Taxi) =
   46.82298 + 0.43137 (Vehicle Registration) + 2.22200 (Retail and Wholesale Employment) + 0.80771 (Service Employment)

7. Internal Truck Productions or Attractions =
   43.42835 + 0.34118 (Vehicle Registration) + 0.17679 (Total Employment)

8a. Internal-External Trip Attractions =
    0.20558 (Vehicle Registration) + 0.61572 (Retail and Wholesale Employment) + 0.55355 (Total Employment)

8b. Internal-External Trip Attractions - University of Illinois =
    35.61367 + 43.55038 (Total Cultural, Entertainment, Recreation, and Parks Acreage) + 0.31679 (Total Employment)

The basic gravity model expression relates trip interchange between two zones (T_{i-j}) such items as the total trips produced in the zone, the total trips attracted to the zone, and measures of spatial separation of the two zones. Spatial separation is defined primarily by travel time information and involves the development of relative trip distribution rates by stipulated increments of time. The typical gravity model expression is often indicated as follows:

$$T_{i-j} = \frac{P_i A_j F_{i-j}}{\sum_{x=1}^{n} A_x F_{i-x}}$$

Where:

T_{i-j} = Trips produced in Zone I and attracted to Zone J

F_{i-j} = Relative trip distribution rate reflecting the spatial separation between Zones I and J

P_i = Total trips produced in Zone I

A_j = Total trips attracted to Zone J

n = Total number of zones

F_{i-x} = Relative rate for distributing trips between Zones I and X, where X varies from one to n

A_x = Total trips attracted to Zone X, where X varies from one to n.

The general procedure in undertaking the calibration of a gravity model for a specific study involves a series of applications of a computer program to test approximations of the relative trip distribution rates (the relative trip distribution rates are sometimes called the travel time factors). The relative trip distribution rate is determined initially by an approximation based on existing data, and the application of the gravity model formula then permits a comparison of the model trip matrix with the actual origin and destination trip matrix. All of the input data for the gravity model calibration program are obtained from the origin-destination data and other field observations. The approximation of the relative trip distribution rates is adjusted by hand after each calibration run of the program, and a new matrix is computed until the trip length distribution, average trip length, and vehicle hours of travel are within the acceptable limits. When these items are deemed acceptable, the gravity model has been calibrated to a point that analytical tests can be made of the data.

A total of four calibration·runs was made on the trip data for the Champaign-Urbana study. The trip purpose categories used in the gravity model development were home-based work, home-based shop, home-based other, non-home-based, truck, and internal-external trips.

Plate II-11, Trip Length Frequency Comparison, O-D Versus Model, compares the trip length frequency of the O-D trips to the trip length frequency of the final (fourth) gravity model calibration for each trip purpose. A review of the tabular data on Plate II-11 indicates that the percent model deviation for each of the purposes for trips, hours, and average trip length is well within plus or minus 3 percent, which is generally considered the maximum acceptable percent model deviation.

Table II-16 shows the travel time factors used in the fourth calibration of the gravity model. These values are recommended for use in application of the gravity model for distributing forecasts of future travel.

All of the comparisons of the trip distribution model data with the O-D data indicate that the model adequately reproduces the O-D data with sufficient accuracy for use in long-range planning.(20)

CONCLUSIONS

The planning data and travel data rates for the Champaign-Urbana area are generally within the range reported in the Bureau of Public Roads Circular Memorandum on "Summary of Urban Travel Data," (Washington, D.C., March, 1967). The following table presents a comparison of some key statistics between the Champaign-Urbana area and cities of similar size reported in the Bureau of Public Roads "Summary of Urban Travel Data" circular memorandum.

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(20) Ibid.

Item	Champaign-Urbana	"Urban Travel Summary" Areas Less Than 100,000 Population* Average	Range
Automobiles/Capita	0.34	0.36	0.30-0.56
Employees/Capita	0.42	0.36	0.29-0.60
Internal Auto Driver Trips/Capita	2.33	2.16	1.47-2.61
Daily Vehicle Miles/Capita	7.40	7.43	3.07-8.08
Daily Vehicle Miles/Auto	21.80	20.67	5.49-22.90

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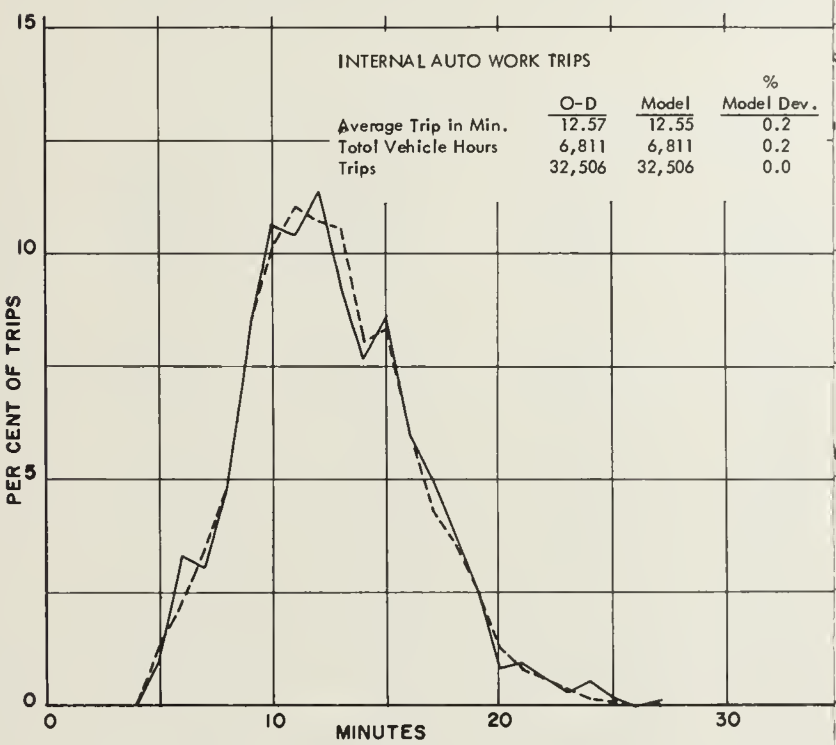
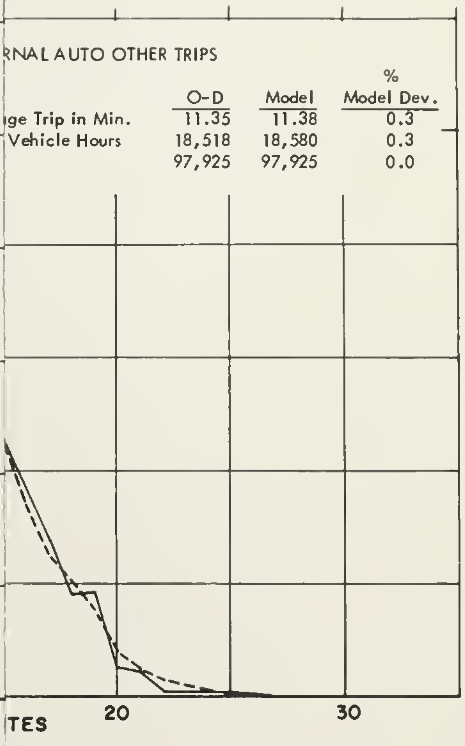
*Urban areas of less than 100,000 population reported in the Bureau of Public Roads Circular Memorandum on "Summary of Urban Travel Data", Washington, D.C., March, 1967.

TRIP LENGTH FREQUENCY COMPARIS
CHAMPAIGN-URBANA URBAN AREA TRANSPORTATI



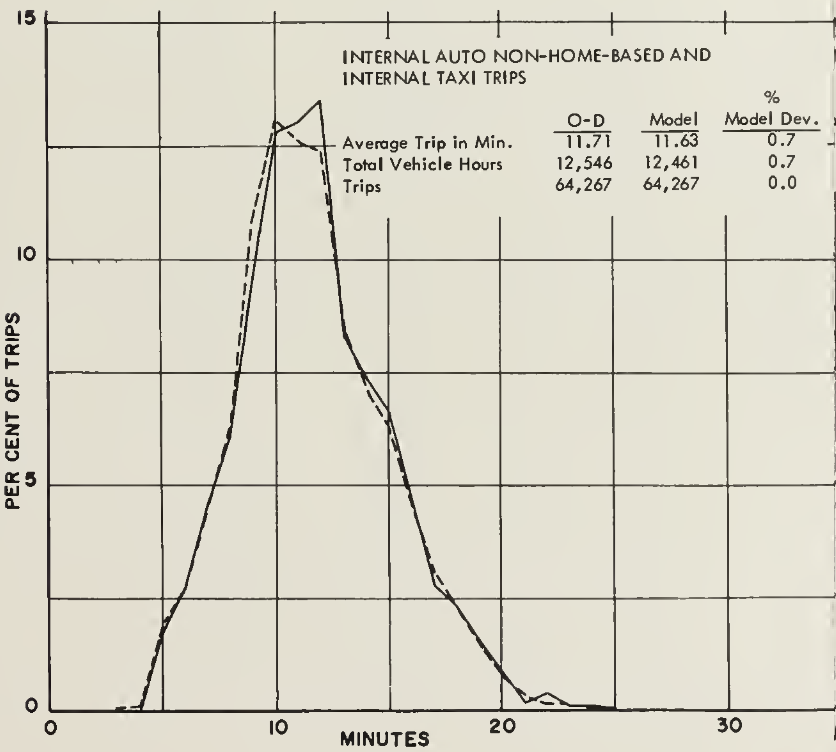
INTERNAL AUTO WORK TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	12.57	12.55	0.2
Total Vehicle Hours	6,811	6,811	0.2
Trips	32,506	32,506	0.0



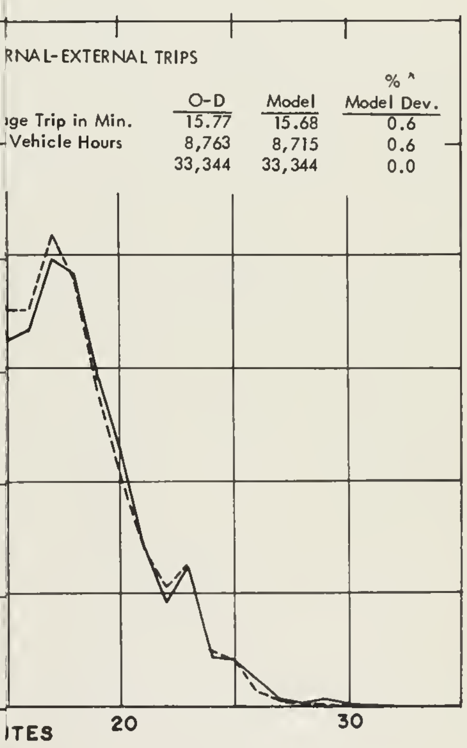
RNAL AUTO OTHER TRIPS

	O-D	Model	% Model Dev.
ge Trip in Min.	11.35	11.38	0.3
Vehicle Hours	18,518	18,580	0.3
	97,925	97,925	0.0



INTERNAL AUTO NON-HOME-BASED AND INTERNAL TAXI TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	11.71	11.63	0.7
Total Vehicle Hours	12,546	12,461	0.7
Trips	64,267	64,267	0.0



RNAL-EXTERNAL TRIPS

	O-D	Model	% * Model Dev.
ge Trip in Min.	15.77	15.68	0.6
Vehicle Hours	8,763	8,715	0.6
	33,344	33,344	0.0

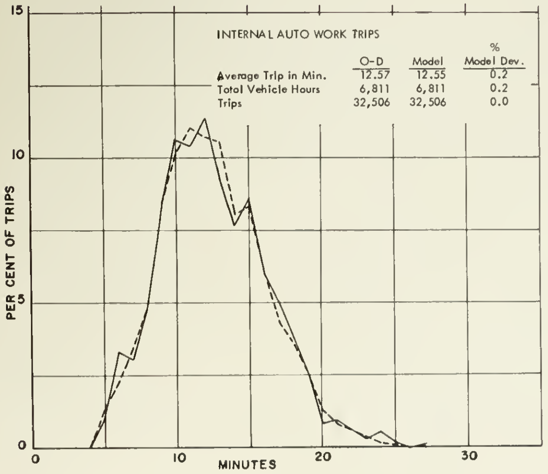
PLATE II-11

HARLAND BARTHOLOMEW AND ASSOCIATES
PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE, URBAN RENEWAL
MEMPHIS, TENNESSEE

TRIP LENGTH FREQUENCY COMPARISON O.D. vs. MODEL

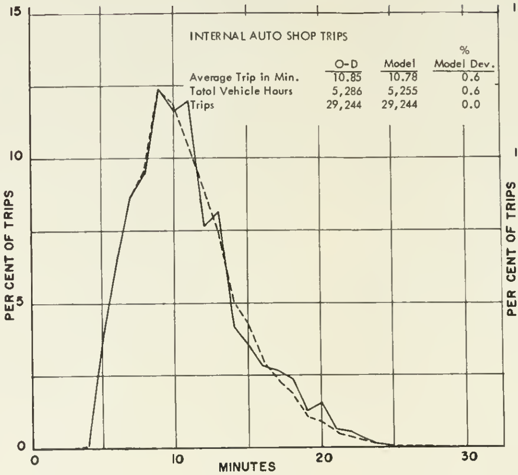
CHAMPAIGN-URBANA URBAN AREA TRANSPORTATION STUDY

LEGEND
—— O-D TRIPS
----- MODEL TRIPS



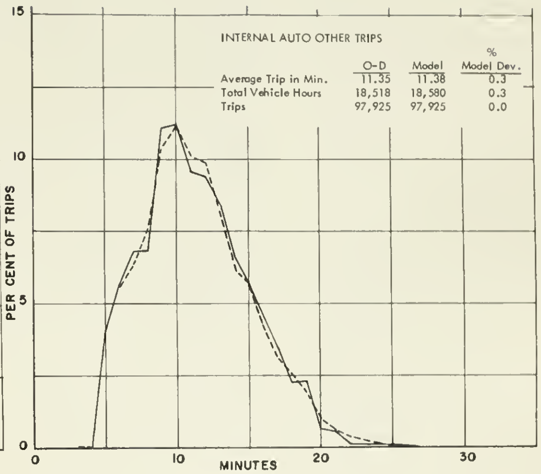
INTERNAL AUTO WORK TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	12.57	12.55	0.2
Total Vehicle Hours	6,811	6,811	0.2
Trips	32,506	32,506	0.0



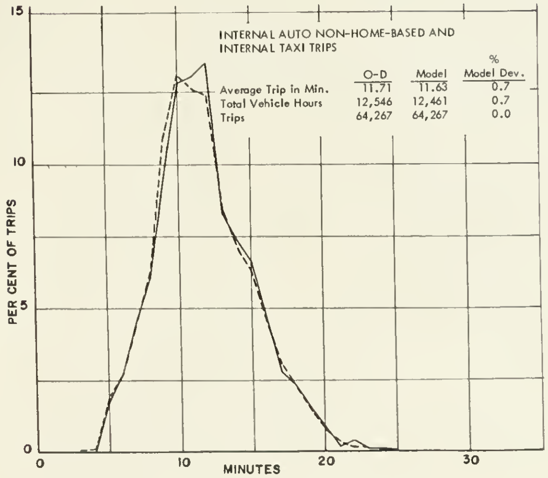
INTERNAL AUTO SHOP TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	10.85	10.78	0.6
Total Vehicle Hours	5,286	5,255	0.6
Trips	29,244	29,244	0.0



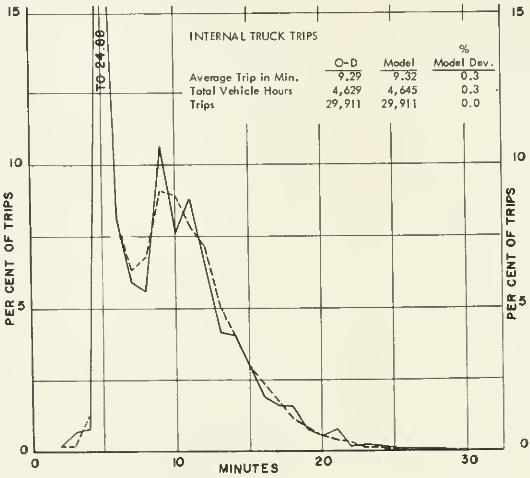
INTERNAL AUTO OTHER TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	11.35	11.38	0.3
Total Vehicle Hours	18,518	18,580	0.3
Trips	97,925	97,925	0.0



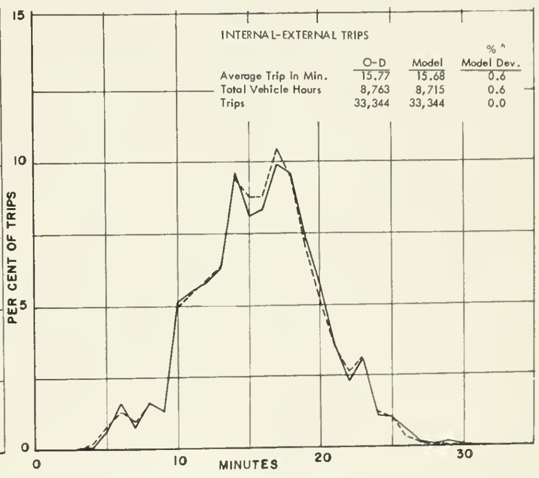
INTERNAL AUTO NON-HOME-BASED AND INTERNAL TAXI TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	11.71	11.63	0.7
Total Vehicle Hours	12,546	12,461	0.7
Trips	64,267	64,267	0.0



INTERNAL TRUCK TRIPS

	O-D	Model	% Model Dev.
Average Trip in Min.	9.29	9.32	0.3
Total Vehicle Hours	4,629	4,645	0.3
Trips	29,911	29,911	0.0



INTERNAL-EXTERNAL TRIPS

	O-D	Model	% Model Dev.
Average Trip In Min.	15.77	15.68	0.6
Total Vehicle Hours	8,763	8,715	0.6
Trips	33,344	33,344	0.0

PLATE II-11

HARLAND BARTHOLOMEW AND ASSOCIATES
PLANNING ENGINEERING LANDSCAPE ARCHITECTURE URBAN RENEWAL
MEMPHIS TENNESSEE

TABLE II-16

TRAVEL TIME FACTORS

Champaign-Urbana Urban Area Transportation Study

Time In Minutes	Home-Based Work	Home-Based Shop	Home-Based Other	Non-Home-Based	Truck	Internal-External
1	5600	5600	5600	5600	2500	5600
2	2200	2600	1700	1900	2350	1800
3	940	1200	620	640	2200	700
4	400	540	360	285	2050	330
5	180	290	240	200	1850	170
6	120	190	180	180	335	120
7	110	130	140	140	150	95
8	106	96	118	120	99	80
9	105	72	99	95	70	72
10	100	52	84	84	54	65
11	92	40	70	70	42	59
12	84	30	59	60	34	54
13	74	24	48	48	25	50
14	64	18	40	40	20	48
15	56	14	34	33	16	46
16	50	11	29	27	13	43
17	42	9	25	24	12	40
18	39	7	22	22	10	38
19	34	6	19	19	9	36
20	30	5	16	17	9	34
21	26	4	13	15	8	32
22	23	3	11	13	8	29
23	19	3	9	11	7	27
24	17	2	8	9	7	23
25	14	2	7	7	6	20
26	12	2	5	5	6	15
27	9	2	4	4	5	7
28	8	1	4	2	5	3
29	6	1	3	1	5	1
30	5	1	2	1	4	1

TRAVEL FORECAST PROCEDURE

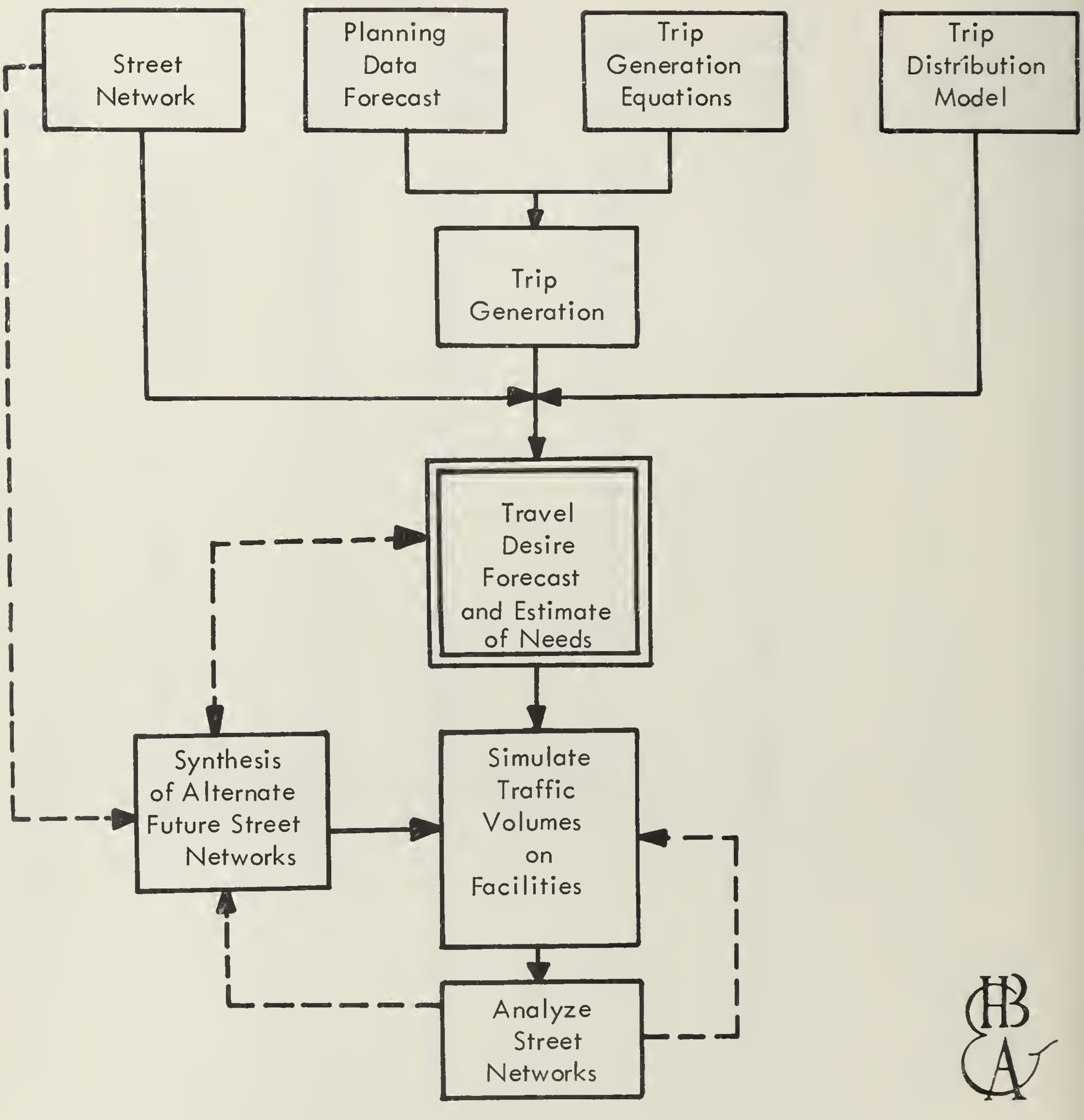

Street Network
Planning Data Forecast
Trip Generation Equations
Trip Distribution Model
Trip Generation
Travel Desire Forecast and Estimate of Needs
Synthesis of Alternate Future Street Networks
Simulate Traffic Volumes on Facilities
Analyze Street Networks

PLATE III-1

CHAPTER III

DATA FORECAST

This chapter presents the forecast of planning data and travel to the design year (1985). Specifically, it discusses the forecast of economic factors and population; land use; local transit; air, rail, and intercity bus lines; trip forecast; terminal and transfer facilities; financial resources; and laws and ordinances. The material in this chapter was summarized from Interim Report C, Economic, Population and Land Use Forecast; Interim Report F, Laws and Ordinances; Interim Report H, Transportation Facilities and Travel Patterns Forecast; Interim Report J, Terminal and Transfer Facilities Inventory and Forecast; and Interim Report K, Inventories and Forecast of Financial Resources.

Future travel demands to be used for transportation planning must be based on the predominant development factors as established in the mathematical models. Providing useful estimates of these future traffic demands requires an estimate of the most likely configuration and size of the study area by the design year. The design year has been chosen as 1985 for the Champaign-Urbana study. The 20-year planning period is both an aid to the mechanical requirements of the transportation study and a device to give perspective to the program of construction which lies ahead. Changes are expected to take place, thus requiring periodic review of the forecasts, the plan, and the implementation program. Thus, 1985 becomes only one of a series of target dates for planning the Champaign-Urbana area.

An evaluation of current and future land uses and the area's socio-economic characteristics has been undertaken to permit estimating future planning data necessary for long-range transportation analyses. Through the application of the mathematical traffic models to the future planning data, estimates of future travel patterns can be made. Plate III-1 illustrates the travel forecasting procedure used in the Champaign-Urbana study and the interrelationship of the planning data, the trip generation model equations, the trip distribution model, and the street network. This travel forecasting procedure permits several feedback or looping possibilities. The four input items can be altered for any travel forecast. In the continuing planning process, it may be necessary to alter all four items based on controlled evaluations and tests; but it is expected that the street network and planning data forecasts will be the primary altered items. In the travel forecast developed in the current study, only the street network was altered in the looping process; and the 1985 travel forecasts were based on the recommended development plans.

ECONOMIC FACTORS AND POPULATION

Economic, population, and land use forecasts are interdependent; and each must be compatible with the other. The future economy of the area must support the future population; the population increase must provide for the future economic activities; and the land use must accommodate the population and their economic activities.

In 1963, the total employment in the study area was 39,725. Educational services employment comprised a major portion of this total employment. It is anticipated that educational services will continue to employ more people than any other category in 1985. Table III-1 summarizes the 1963 and 1985 employment data for the Champaign-Urbana study area.

Per capita income is forecasted to increase from $1,575 in 1965 to $4,770 in 1985, an increase of 85 percent. The per capita income has direct correlation with auto ownership. Auto registration in the study area will increase from 30,076 in 1965 to 56,250 autos by 1985. This represents an increase of 75 percent. Accordingly, the number of vehicles per capita will increase from 0.34 in 1965 to 0.41 in 1985.

The population of the study area is expected to increase from 94,236 in 1965 to 137,200 in 1985. This represents an increase of 45 percent over the 1965 level. Distribution of this population among the geographic sections of the study area depends upon land availability and the relative attractiveness of each section for development. The occupied

TABLE III-1

SUMMARY OF TOTAL EMPLOYMENT CHANGE 1963-1985

Champaign-Urbana Urban Area Transportation Study

Employment Sector	1963	1985	Change 1963-1985 Number	% Increase
Trade	7,935	12,450	4,515	56.8
Manufacturing	4,126	8,810	4,684	113.5
Services	27,664	47,970	20,306	73.4
Education	(17,019)	(26,120)	(9,101)	(53.4)
Other	(10,645)	(21,850)	(11,205)	(105.2)
Total	39,725	69,230	29,505	74.2

Note that the employment group "Other," although constituting a separate sector, has been included in the Services group, because the majority of employment in this group was of service types.

dwelling units to house the population are anticipated to increase from 36,987 in 1965 to 51,220 in 1985. Economic and population data for the study area were forecasted by traffic analysis zone for input to the trip generation forecast.(21)

Plate III-2 presents historic and forecasted population trends in the study area.

1985 LAND USE

The study area covers 81,294 acres, or about 127 square miles, of which 23.6 square miles are now developed. Table III-2 presents the land use area requirement in the study area. As indicated in Table III-2, residential acreage is forecasted to increase from 4,482 in 1965 to 9,861 in 1985. Transportation, communication, and utilities are forecasted to utilize 6,321 acres; services will use 5,137 acres; cultural, entertainment, and recreation will occupy 979 acres; manufacturing will utilize 1,417 acres; and trade will amount to 448 acres. Summaries of the various land use categories are given in Table III-2. The 1985 land use plan for the entire study area as developed in the planning studies is presented in Plate III-3. The land use plan portrays the anticipated urban development over the next 20 years and serves as a framework for developing socio-economic data on a traffic zone basis.

Residential development in Champaign is anticipated on the south, southwest, and west sides of the city. Residential development in Urbana is anticipated on the northeast, east, and southeast sides of the city. The majority of new residential development is anticipated to be of single family nature in these areas. Although not illustrated on Plate III-3, the majority of multiple family (high density) development will be located around both cities' Central Business Districts and the University of Illinois.

Industrial development is anticipated on the north side of the two cities. Very little industrial land will be added to the existing urban area due to the limited vacant acreage available within the developed area. Major industrial areas in Champaign are anticipated along North Mattis Avenue and North Market Street with the larger portion of industrial land being located along North Mattis Avenue. In Urbana, a major industrial area is anticipated north of Interstate 74 at Lincoln Avenue. Another industrial area, anticipated to have an appreciable increase in industrial land area use, will be located east of Urbana's Central Business District, extending south to Philo Road.

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(21) See additional details in Interim Report C, Economic, Population, and Land Use Forecasts, Harland Bartholomew and Associates, January, 1968.

TABLE III-2

LAND USE AREA REQUIREMENTS

Champaign-Urbana Urban Area Transportation Study

Generalized Land Use	1965 Acres	1985 Acres	Percent Change 1965-1985
Residential	4,482.3	9,861.4	120
Manufacturing	272.7	1,417.4	420
Transportation, Communication, & Utilities	5,400.2	6,321.1	17
Trade	351.7	447.9	27
Services	3,901.9	5,136.5	32
Cultural, Entertainment, & Recreation	694.9	978.9	41
Resource Production & Extraction, and Undeveloped Land and Water Areas	66,191.1	57,130.6	-14
Total Land Use	81,293.8	81,293.8	0

Transportation (other than streets), communication, ana utility land uses are anticipated to increase only slightly over the 1965 total. The major land use will continue to be the University Airport located in the southern portion of the study area. Other major land uses and their locations anticipated in this category are: the sanitary land fill operation in northeast Urbana, transportation-oriented development along the Illinois Central Railroad in Champaign, and the areas devoted to parking in both cities' Central Business Districts.

The major increase in land used for trade and services is anticipated at presently developed outlying commercial locations. In Champaign, an increase in commercial land is anticipated near the County Fair Shopping Center, along North Prospect Avenue, and along South Neil Street. In Urbana, additional commercial land is anticipated north of the Central Business District, along U.S. 45 near the Interstate 74 interchange, and along Philo Road south of the city. Small neighborhood commercial centers are anticipated within the new urban growth areas of both cities; however, their development and range of activities will be limited to serving surrounding neighborhood areas. The Central Business Districts of both

RATIO TECHNIQUE

POPULATION GROWTH TRENDS

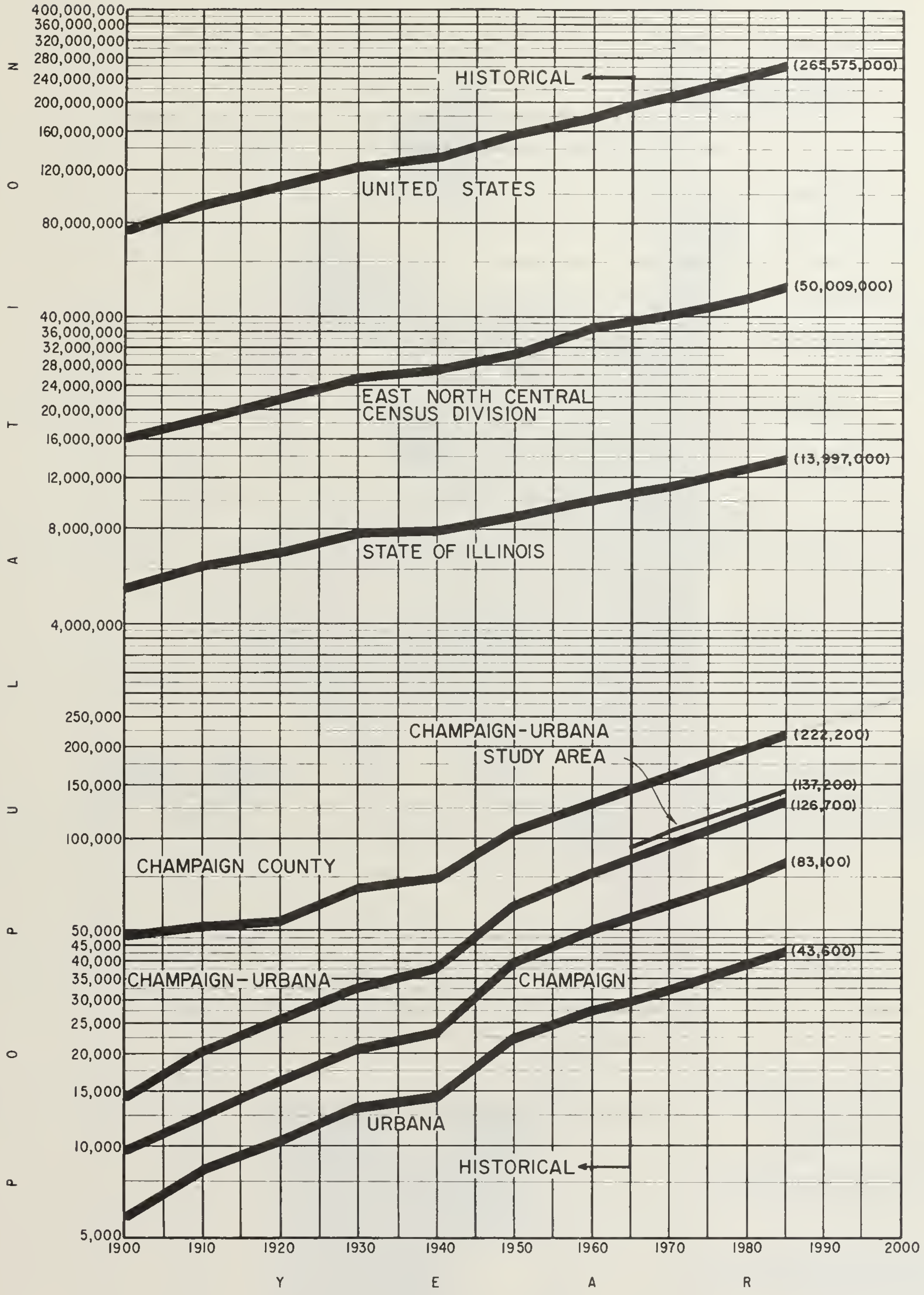
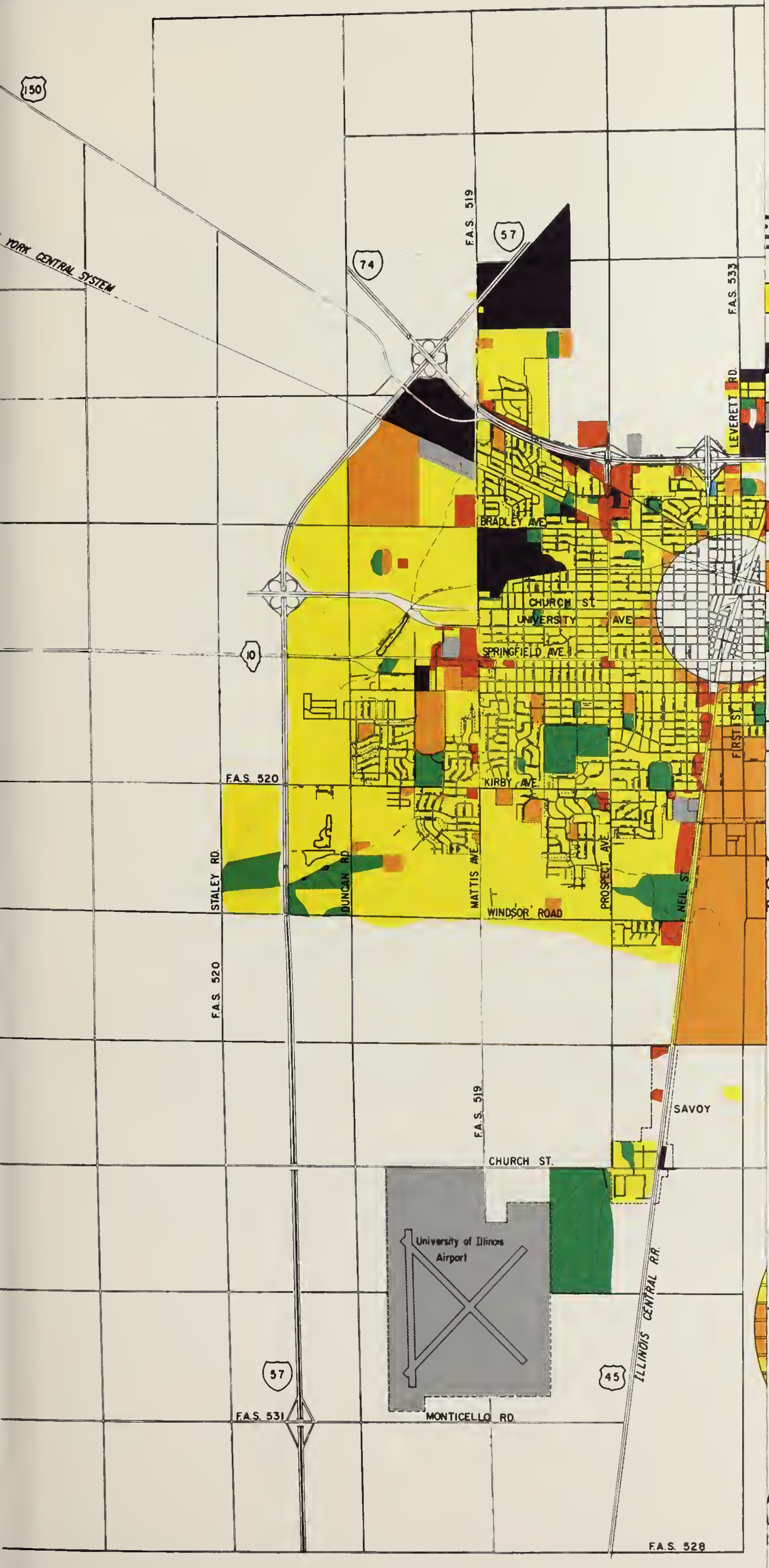


PLATE III-2

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

35 GENERALIZED LAND USE FORE



EGEND

🟨 RESIDENTIAL

⬛ MANUFACTURING

▩ TRANSPORTATION, COMMUNICATION AND UTILITIES

🟥 TRADE

🟧 SERVICES

🟩 CULTURAL, ENTERTAINMENT AND RECREATIONAL

☐ AGRICULTURE, UNDEVELOPED LAND AND WATER AREAS

NOTE - THE LAND USE FORECAST INDICATED ON THIS PLATE IS ASSUMED FOR TRANSPORTATION STUDY PURPOSES ONLY.

CHAMPAIGN-URBANA
URBAN AREA
RANSPORTATION STUDY

NORTH

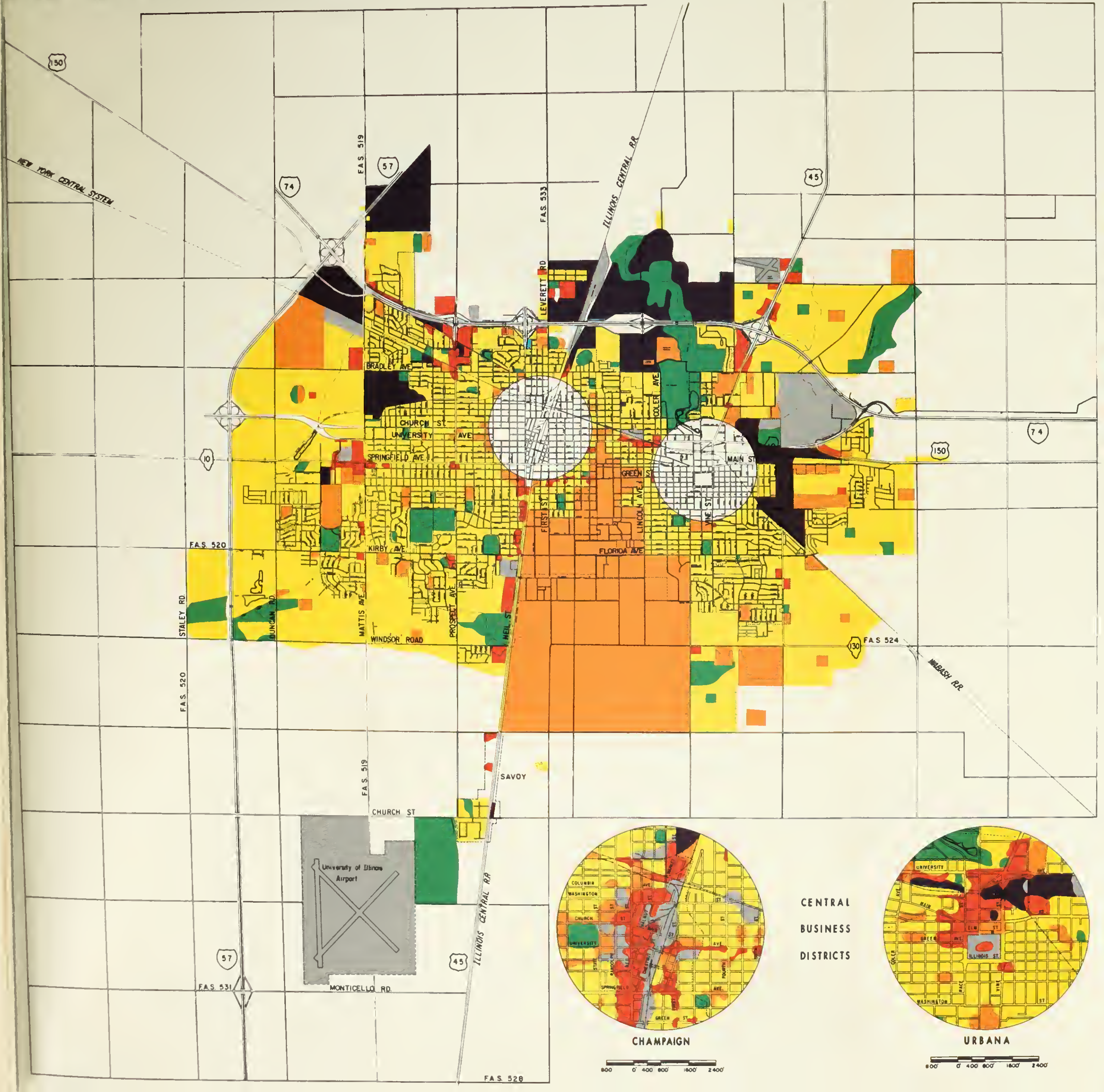
GRAPHIC SCALE IN FEET

1600 0 800 1600 3200 4800 6400 8000

PLATE III-3

AND BARTHOLOMEW AND ASSOCIATES
LANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
IS, TENNESSEE

1985 GENERALIZED LAND USE FORECAST



LEGEND

- 🟨 RESIDENTIAL
- ⬛ MANUFACTURING
- ▨ TRANSPORTATION, COMMUNICATION AND UTILITIES
- 🟥 TRADE
- 🟧 SERVICES
- 🟩 CULTURAL, ENTERTAINMENT AND RECREATIONAL
- ☐ AGRICULTURE, UNDEVELOPED LAND AND WATER AREAS

NOTE - THE LAND USE FORECAST INDICATED ON THIS PLATE IS ASSUMED FOR TRANSPORTATION STUDY PURPOSES ONLY.

CHAMPAIGN-URBANA URBAN AREA TRANSPORTATION STUDY

NORTH

GRAPHIC SCALE IN FEET

1600 0 800 1600 3200 4800 6400 8000

PLATE III-3

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

cities are anticipated to accommodate a large portion of the additional growth in trade and services.

The University of Illinois will continue to be the largest single land use in the educational services sector. The second largest individual educational land use will be the new Parkland College campus located in northwest Champaign. It is anticipated that elementary schools will be located within the new growth areas, distributed on the basis of need by the surrounding population.

An increased amount of land is anticipated in public and semipublic land uses in answer to an increasing population. Major conservation areas have been proposed on the north and northeast side of Urbana, north of Interstate 74. In Champaign, it is anticipated that additional semipublic land will be developed on the southwestern side of the city. The major public and semipublic areas, which include the Champaign County Country Club, Centennial Park, Crystal Lake Park, and the University of Illinois Golf Course at Savoy, are anticipated to remain as public and semipublic land uses. It is anticipated that playgrounds and neighborhood parks will be located within the new growth areas in relation to population and school location.(22)

LOCAL TRANSIT

The analysis of present transit usage indicates the role of mass transportation in the Champaign-Urbana area as a public service. The level of the usage is not sufficient to be self-supporting. Based on the planning data forecast, it is expected there will be approximately 137,000 people in the study area by 1985. Using the usage rates of 2.0 trips per 100 population for public transit and 10.0 trips per 100 enrolled students for the University of Illinois transit, the most optimistic usage would be approximately 6,200 trips per day by transit. A policy of government support of subsidy of transit service on a larger scale could attract additional riders; however, it could not be expected to have major effect on the street and highway needs.

Of the total transit trips estimated in 1985, approximately 2,600, or 42 percent of them, will be accommodated by the public transit system while approximately 3,600, or 58 percent of them, will use the University system. This constitutes approximately 6,200 trips per day, which is an increase of 41 percent over the year 1965 level of 4,400 trips per day.

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(22) Ibid.

The anticipated 1985 transit service area will be adequately served by streets and highways in the final transportation plan developed as a part of the transportation study. This provides the opportunity for the transit system to be accommodated by the recommended plan in such a manner as to permit the provision of the most logical and efficient routings of buses to serve both the existing and probable future service areas. There are no indications of a need for planning at this time to provide in the foreseeable future any "exotic" or high speed transit service. Of course, the actual use of transit by 1985 will depend to a large degree upon such factors as the type of transit vehicles available, the level of service of public transit, and the availability of private vehicles for travel.

Within a community there is an element of the population that must depend upon public transportation, and it becomes necessary for public officials to insure that adequate service is provided. These population groups include those too young to drive, those too old to drive, those too poor to drive, and those unable to drive. In addition, periodic checks of the number of passengers using transit as well as the potential transit demand is required to permit the anticipation of increased service in the future when the need arises.

Major emphasis on transit as a means of obtaining a better overall transportation system in the Champaign-Urbana study area would be fruitless. A policy decision by the local governments must be made on the course of transit in the area. If the policy decision is to continue transit service, it should be recognized that it will be a public service similar to street lighting and will require financial support.(23)

AIR, RAIL, AND INTERCITY BUS LINES

Intercity travel refers to the movement of people and goods between cities within the study area and cities outside the study area. It generally involves five major modes of intercity transport; namely, air, rail, highway (truck), water, and pipeline. The Champaign-Urbana study area is served with air, rail, and highway intercity travel modes only. This section presents limited available data on existing and forecasted intercity travel modes in the Champaign-Urbana study area.

Scheduled air transportation service is provided by Ozark Air Lines, which flies directly into Chicago, St. Louis, and Indianapolis. In addition, the airlines provide service to all major central Illinois cities. Additional flights are available on a charter basis within the Champaign-Urbana area. The University of Illinois air service is owned and operated by the University of Illinois and generally provides air service and training to the staff and the students.

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(23) See additional details in Interim Report H, Transportation Facilities and Travel Patterns Forecast, Harland Bartholomew and Associates, October, 1969.

Air service has been increasing at a faster rate than any other intercity mode of travel in recent years. National passenger travel by air has more than doubled between 1956 and 1965. (See Table III-3, Civil Aviation Growth Trends--U.S.) During the 1960-1966 period, passenger travel for the Champaign-Urbana area has been increasing at a faster rate than the national figures.

The bulk of air passenger service is provided by the Ozark Air Lines. The Ozark Air Lines annual enplaning passengers increased from 28,618 in 1960 to 55,435 in 1966. The annual number of passengers carried by the University air service from the University of Illinois Willard Airport in its own aircraft increased steadily from 1958 during 1958-1959 to 3,680 during 1965-1966. The University air service is anticipated to handle about 9,600

TABLE III-3

CIVIL AVIATION GROWTH TRENDS--U.S.

Champaign-Urbana Urban Area Transportation Study

Year	Enplaned Passengers (Millions)
1956	40.8
1957	44.0
1958	43.6
1959	49.4
1960	50.6
1961	55.0
1962	58.9
1963	67.3
1964	76.7
1965	89.1

Source: FAA Statistical Handbook of Aviation, 1966 passengers in 1985. The Ozark Air Lines enplaning passenger volume is projected to approximate about 210,000 passengers in 1985. The total air passenger volume is expected to increase from about 59,115 in 1966 to about 219,600 in 1985. The 219,000 annual passengers figure is considered reasonable inasmuch as the national air travel has been doubling approximately every eight years. (See Table III-3.) This increase in the passenger travel by 1985 may require extensive expansion of the existing air terminal facilities and car parking facilities.

Four railroads (Illinois Central, Penn Central, Norfolk and Western, and Illinois Terminal) provide rail service to Champaign-Urbana. The Illinois Central is a main line route while the others are major branches of their systems. All four lines provide freight service with switching agreements to develop a well-coordinated rail system. Passenger service is available on the Illinois Central (N-S) and on the Norfolk and Western (E-W). East-west passenger service is slightly inadequate in that the depot is not located in the cities of Champaign-Urbana, but in Tolono, approximately ten miles south of the twin cities.

Intercity rail passenger travel has been declining for the last two decades virtually all over the United States. Railroad local officials contacted during this study indicated that train movements over the past several years have been constant and expected that this trend will continue in the foreseeable future. However, it was indicated that additional train movements between Chicago and the University of Illinois may be added on special occasions. Examples of special occasions include football games and student vacation periods.

Intercity bus service is provided by Greyhound Bus Lines, Illini Swallow Lines, and the Crown Transit Lines. These three intercity bus lines connect Champaign with all major cities in Illinois and neighboring states. As a result of discussions with the bus lines, it was indicated that bus movements have been consistently the same for the past several years and that there is no indication at this time that this pattern will be changed.

No adequate historical trend data on passenger travel or freight movement by intercity bus lines, truck, and railroads were available in order to provide definite trends for future forecasts of intercity passenger and freight travel by these modes. However, discussions with the local representatives of bus and railroad travel modes indicated that they did not have any plans for significant expansion of either their terminal facilities or the frequency of operation of their vehicles in the foreseeable future. Local officials of truck lines indicated that any increase in freight operations could be handled by present terminals or minor expansions on present terminal sites due to existing reserve capacities.(24)

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(24) Ibid.

1985 TRIP FORECAST

The travel forecasts for the target year for the entire study area were made by applying the trip generation model equations developed in the analyses of travel to the forecasted planning data to determine the trip ends by small areas. These trip ends were connected by the trip distribution model to arrive at a travel desire matrix. The resulting trip matrix included the auto and truck trips for internal-internal moves and internal-external moves. The through trips which are passing through the study area without desiring to stop were forecasted based on growth rates expected at the various route locations.

Cross-checks of the resulting data were determined using a factorial procedure involving trends in population, per capita vehicle registration, and average travel per vehicle. The factorial procedure involves the multiplication of increase ratios for three component data in order to obtain an overall increase factor for vehicle trips. When these increase ratios for the three components of travel are multiplied, an overall increase factor for travel is obtained for the time interval and area selected. For example, the following calculation can be made for the Champaign-Urbana study area for the 1965-1985 time interval: Population Factor x Vehicle per Capita Factor x Travel per Vehicle Factor of $\frac{137{,}200}{94{,}236} \times \frac{0.41}{0.34} \times 1.05 = 1.45 \times 1.21 \times 1.05 = 1.84$

The use of the factorial method in projecting total travel increases as described above provides a cross-check of the reasonability of the travel projections developed with the mathematical models. For example, the previously developed increase factor of 1.84 for the Champaign-Urbana area was used to project the internal and internal-external trips from 286,000 in 1965 to 1985. The resulting value of 526,000 compares favorably with the estimate of 518,000 as obtained for the mathematical model for trip generation.

Through traffic volume increases were developed using historical traffic data showing traffic volume increase trends (at external stations) for the study area. Internal-external trips were forecasted using the historical volume data at the external stations also. Internal-external trips, determined by the extrapolated trend data, were used to check the internal-external trips, as determined by the use of the mathematical models. Through traffic volumes were cross-checked by the factorial method with components derived from the data for the area outside but near the Champaign-Urbana study area.

A summary of the vehicle trips developed in the forecasting procedure is given in Table III-4. Substantial growth is expected in the trips by 1985. The total internal-internal moves are expected to increase from 253,853 in 1965 to 439,659 by 1985 based on the expected growth. This is a predicted increase of approximately 73 percent. This compares to an expected population increase of approximately 45 percent during the 20-year period.

TABLE III-4

1965 AND 1985 VEHICLE TRIP SUMMARY

Champaign-Urbana Urban Area Transportation Study

Trip Purpose	1965	1985	Percent Increase
Work	32,506	58,897	81
Shop	29,244	53,663	84
Other	97,925	175,618	80
Non-home-based	64,267	106,640	66
Truck	29,911	44,841	50
Total Internal Trips	253,853	439,659	73
Internal-External	32,203	78,713	130
External-External	5,107	20,807	308

The trips between the study area and the areas outside of the study area (internal-external) are expected to increase from 34,136 in 1965 to 78,788 in 1985, which is a 130 percent increase over the 1965 levels. The through trips (passing through the area) are expected to increase from 5,107 in 1965 to 20,807 in 1985, or a 308 percent increase over the 1965 figures. These through trips amount to about 4 percent of the trips in the area, and the major volumes are on Interstate Highways 57 and 74. Table III-5 summarizes the internal-external and external-external trip forecasts by station.(25)

TERMINAL AND TRANSFER FACILITIES FORECAST

This section discusses the parking needs forecasts in the study area. The inventory and analysis of existing conditions were discussed in Chapter II.

By relating the existing, available parking supply with the future demand, the parking deficiencies can be determined. Of course, it should be understood that any on-street

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(25) Ibid.

TABLE III-5

1965 AND PROJECTED 1985 STATION VOLUMES

Champaign-Urbana Urban Area Transportation Study

Station Number and Location	1965 Total Volume	1965 Ext.-Int. Volume	1965 Through Volume	1965 Per Cent Through	1985 Total Volume	1985 Ext.-Int. Volume	1985 Through Volume	1985 Per Cent Through
303 (I-74 East)	6,917	4,717	2,200	32.0	21,890	10,950	10,940	50.0
313 (U.S. 150 East)	2,300	2,200	100	4.0	3,000	2,880	120	4.0
304 (U.S. 45 North)	10,038	7,540	2,498	25.0	9,701	9,312	389	4.0
305 (Leverett Road)	1,028	993	35	3.5	1,200	1,158	42	3.5
315 (I-57 North)	--	--	--	--	14,600	7,300	7,300	50.0
306 (F.A.S. 519)	1,806	1,663	143	8.0	4,700	4,324	376	8.0
307 (I-74 West)	5,823	4,171	1,652	28.0	4,700	4,324	376	8.0
316 (U.S. 150 Northwest)	--	--	--	--	17,305	8,700	8,605	50.0
308 (Illinois 10 West)	5,300	4,613	687	13.0	4,800	4,320	480	10.0
317 (Decatur Highway)	--	--	--	--	11,200	5,600	5,600	50.0
309 (Monticello Road)	600	436	164	27.0	1,900	1,710	190	10.0
310 (U.S. 45 South)	7,600	5,045	2,555	34.0	6,000	5,760	240	4.0
314 (I-57 South)	--	--	--	--	12,800	6,400	6,400	50.0
311 (Church Street)	404	400	4	1.0	1,106	1,100	6	0.5
312 (Illinois 130)	2,534	2,358	176	7.0	5,500	4,950	550	10.0
TOTAL	44,350	34,136	10,214	(23.0)	120,402	78,788	41,614	(34.6)

See Plate II-2 for external station locations.

parking spaces removed should be replaced by conveniently located off-street parking facilities. The 1985 parking space demand was forecasted by comparing 1965 gravity model attractions to the 1985 model attractions. Since the inventories were conducted in 1967 for the Urbana CBD and University area and in 1966 for the Champaign CBD, the parking space demand for 1965 was found by reducing the 1967 demand by an amount proportional to the change in trip attractions between 1965 and 1967. A summary of the inventoried demand and supply and the forecasted demand and deficiencies is presented in Table III-6.

Accordingly, the Urbana CBD will have an overall surplus of 769 parking spaces in 1985. The University of Illinois area will have a deficiency of 13,363 spaces, and the Champaign CBD will have a deficiency of 673 spaces. The Urbana CBD, the University of Illinois area, and the Champaign CBD will have 3, 15, and 17 deficient zones, respectively. The need for increased parking capacity in already congested areas is a problem which must be dealt with in the overall transportation planning process. Plates III-4A and III-4B show zones of parking deficiency and zones in which parking facilities may be provided for the Champaign CBD and the University of Illinois area, respectively.(26)

TABLE III-6

SUMMARY OF PARKING INVENTORY AND DEMANDS

Champaign-Urbana Urban Area Transportation Study

Area	1967 Spaces Available	1965 Demand	1985 Demand	1985 Space Deficiency or (Surplus)
Urbana CBD	2,461	1,103	1,692	(769)
University of Illinois	16,019	12,100	29,652[2]	13,633[2]
Champaign CBD	3,268[1]	1,786	3,545	673

[1] Spaces available in 1966.

[2] Future parking demand and resulting deficiencies in the University area would depend on adopted University regulations regarding student parking at that time.

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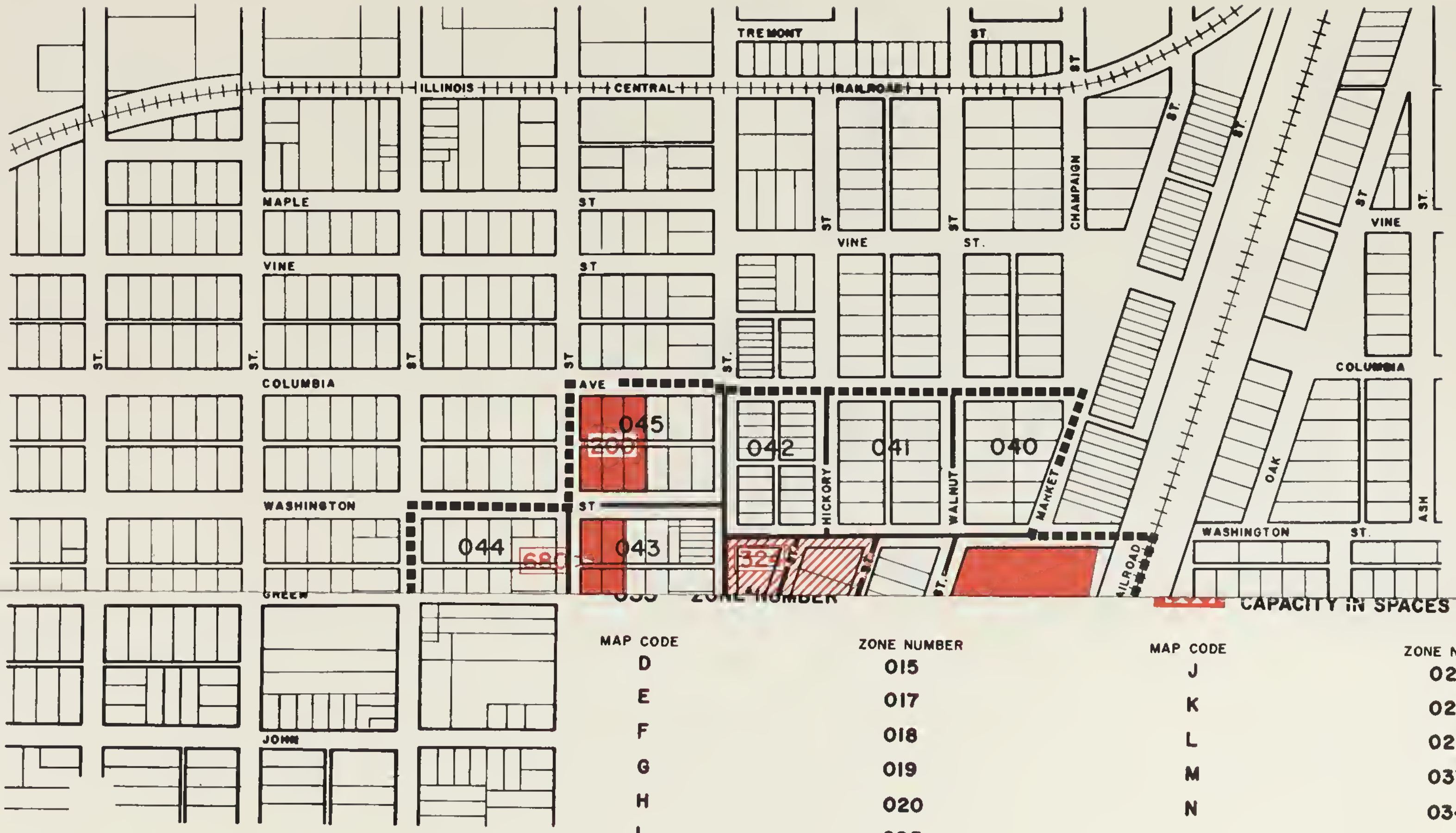
(26) See additional details in Interim Report J, Terminal and Transfer Facilities Inventory and Forecast, Harland Bartholomew and Associates, January, 1969.

PARKING DEFICIENCY
PROPOSED PARKING FACILITIES

CHAMPAIGN, ILLINOIS
CENTRAL BUSINESS DISTRICT & VICINITY
1965



MAP CODE	ZONE NUMBER	MAP CODE	ZONE NUMBER
D	015	J	026
E	017	K	028
F	018	L	029
G	019	M	037
H	020	N	034
I	025		

HARLAND BARTHOLOMEW AND ASSOCIATES
MEMPHIS, TENNESSEE

PLATE III-4A

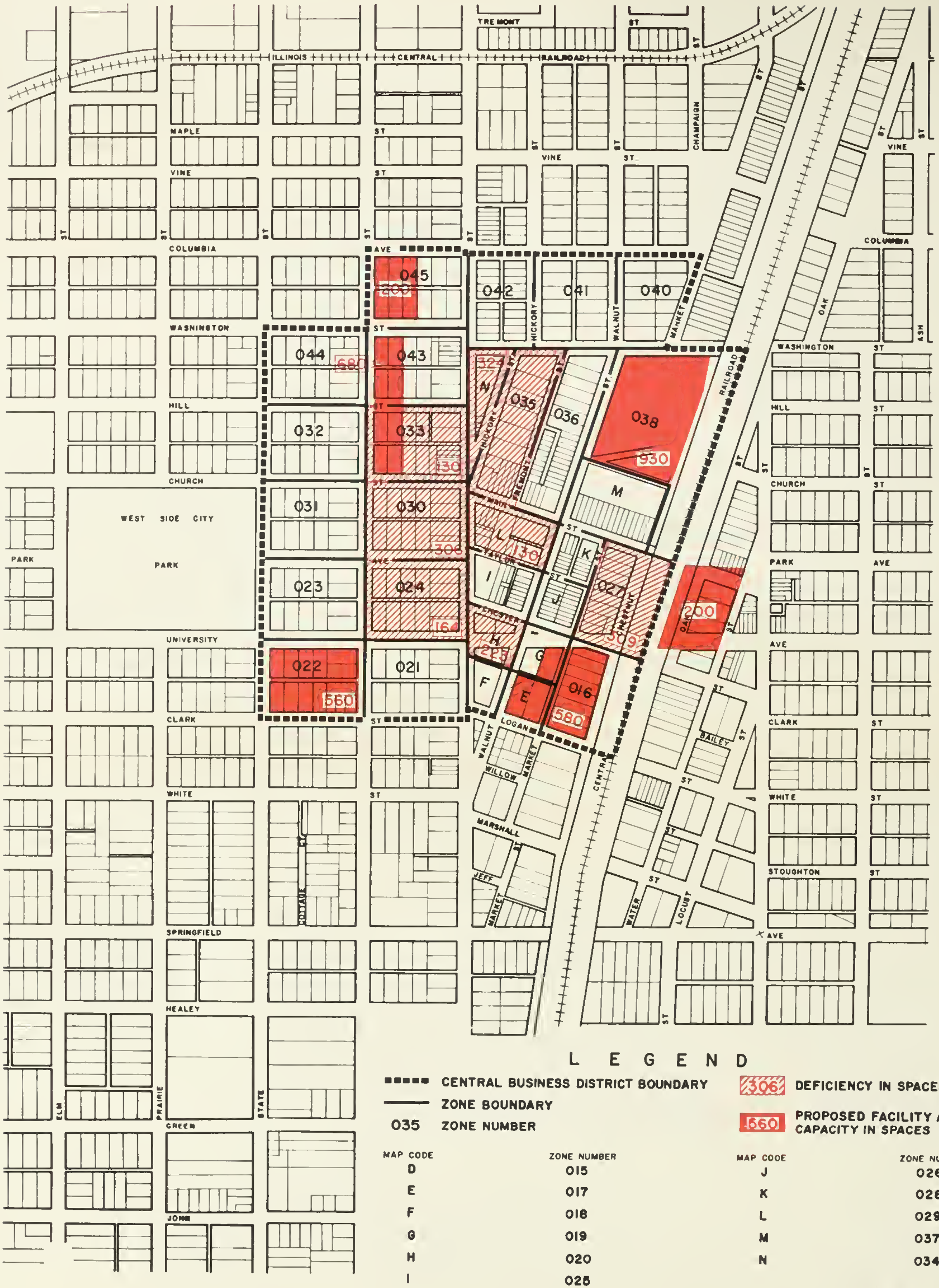
CITY PLANNING DEPARTMENT
0 200 400 600
CHAMPAIGN, ILLINOIS

PARKING DEFICIENCY
PROPOSED PARKING FACILITIES

CHAMPAIGN, ILLINOIS

CENTRAL BUSINESS DISTRICT & VICINITY

1965



L E G E N D

■■■■■ CENTRAL BUSINESS DISTRICT BOUNDARY

━━ ZONE BOUNDARY

035 ZONE NUMBER

▨306 DEFICIENCY IN SPACES

🟥560 PROPOSED FACILITY AND CAPACITY IN SPACES

MAP CODE	ZONE NUMBER	MAP CODE	ZONE NUMBER
D	015	J	026
E	017	K	028
F	018	L	029
G	019	M	037
H	020	N	034
I	025		

HARLAND BARTHOLOMEW AND ASSOCIATES

PLATE III-4A

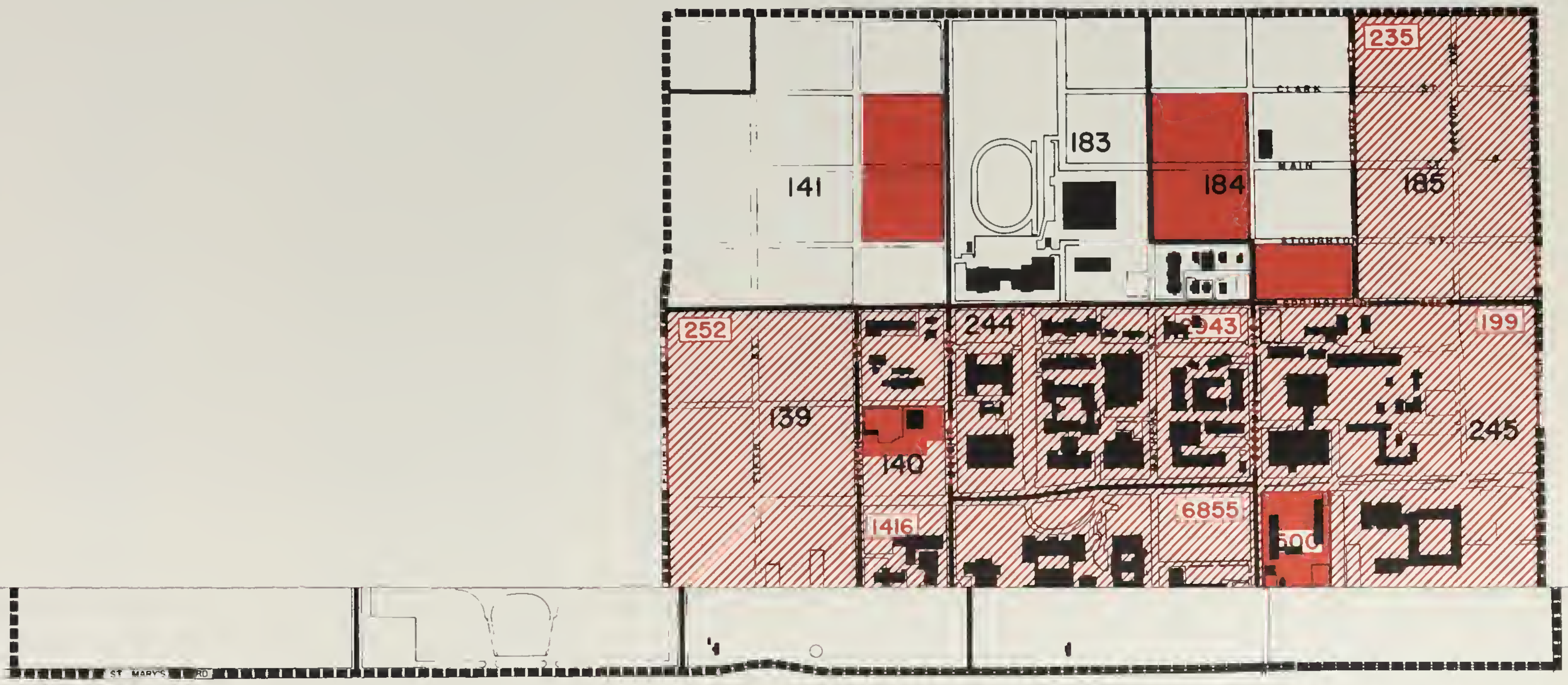
CITY PLANNING DEPARTMENT

CHAMPAIGN, ILLINOIS

PROPOSED PARKING FACILITIES

CHAMPAIGN - URBANA, ILLINOIS

UNIVERSITY OF ILLINOIS AREA



L E G E N D

▪▪▪▪▪	PARKING STUDY AREA BOUNDARY
───	ZONE BOUNDARY
215	ZONE NUMBER
▨	AREA OF PARKING DEFICIENCY
1203	DEFICIENCY IN SPACES
🟥	PROPOSED PARKING FACILITY

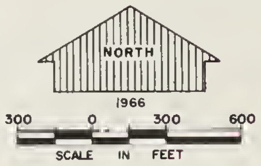
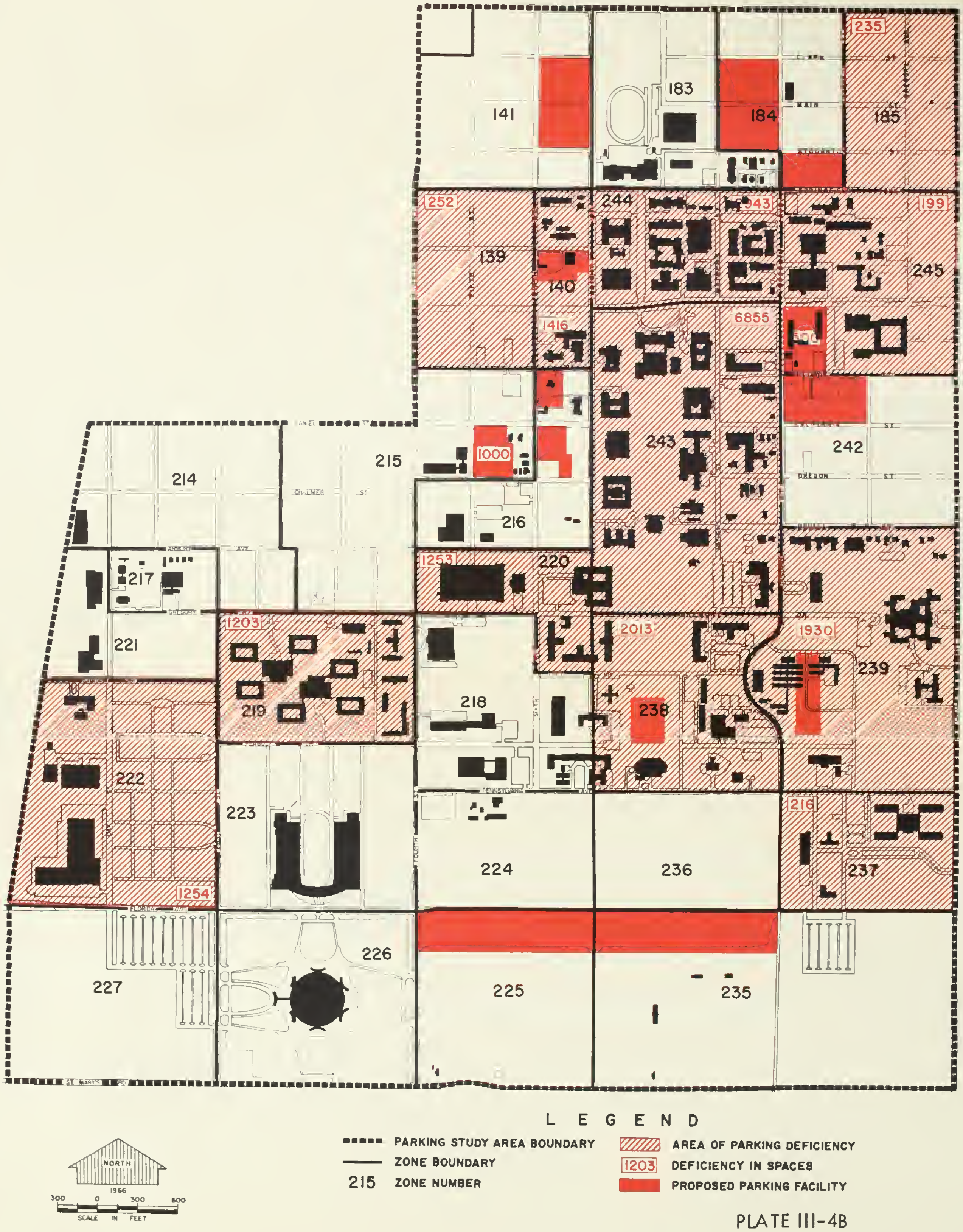


PLATE III-4B

HARLAND BARTHOLOMEW AND ASSOCIATES
PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE, URBAN RENEWAL
MEMPHIS, TENNESSEE

PARKING DEFICIENCY
PROPOSED PARKING FACILITIES
CHAMPAIGN - URBANA, ILLINOIS
UNIVERSITY OF ILLINOIS AREA



L E G E N D

- ▪▪▪▪ PARKING STUDY AREA BOUNDARY
- —— ZONE BOUNDARY
- 215 ZONE NUMBER
- ▨ AREA OF PARKING DEFICIENCY
- 1203 DEFICIENCY IN SPACES
- 🟥 PROPOSED PARKING FACILITY

PLATE III-4B

HARLAND BARTHOLOMEW AND ASSOCIATES
PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE, URBAN RENEWAL
MEMPHIS, TENNESSEE

FINANCIAL RESOURCES FORECAST

Analysis of the existing financial resources was presented in Chapter II. This section pertains to the forecast of financial resources for the period 1966-1985. The total available revenues as forecasted by the Illinois Division of Highways are expected to approximate $39 million. The estimated revenues over the 1966-1985 time period include funds available for construction, right-of-way, and engineering only. The $39 million figure includes about $2.4 million assumed to be available to the University of Illinois. Revenues for the University of Illinois are subject to availability of funds and the designation of these funds by the legislature and the board of trustees for street improvements.(27)

LAWS AND ORDINANCES

This section discusses the suggested regulations that should be considered by the local governmental agencies. The inventory and evaluation of existing laws and ordinances were discussed in Chapter II.

Illinois statutes authorize the adoption of some additional regulations that are not now in effect in the local study area. Some of the most important items relate to the official map, building setback lines, and amendments and revisions.

The Illinois statutes authorize cities and villages to adopt and enforce an "official map" indicating existing and future streets and their proposed width, alleys, parks, playgrounds, schools, and other public grounds. The official map may also extend beyond corporate limits; and, thus, adequate street widths can be acquired whenever an area is subdivided. The Cities of Champaign and Urbana have indicated an interest in preparing and adopting an official map. It is strongly urged that such action be taken within the near future and that Savoy take similar steps. Illinois counties are not specifically authorized to take such action.

BUILDING SETBACK LINES

Illinois cities and counties are also authorized to adopt setback lines along existing major streets and roads. This legislation is older than the authority for the "official map," and it is probable that the latter would provide for adequate control. However, it may be the logical solution for control within corporate limits and the outlying urban areas and should be kept in mind in the event that difficulties are encountered in adopting or enforcing an "official map."

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(27) See additional details in Interim Report K, Inventories and Forecasts of Financial Resources, Harland Bartholomew and Associates, February, 1969.

AMENDMENTS AND REVISIONS

It is essential that all ordinances and regulations that assist in effectuating the transportation plan be maintained in a completely up-to-date status. This would include any amendments or adjustments necessary to keep abreast of changing conditions or needs within the local area or to take advantage of new planning techniques or legislation. The Regional Planning Office is the logical agency to call such matters to the attention of the local legislative agencies.

UNIVERSITY OF ILLINOIS

The University is a valuable and integral portion of the local urban area, yet it is not subject to any of the local regulations. However, it should have a major interest in assuring that the urban area is soundly developed and that the University development would be properly related thereto. The University has been represented in the major committees working on the transportation study and plan and, thus, should be thoroughly conversant with the findings and recommendations.

It is suggested that the University take the following steps:

1. Make any adjustments in its master plan necessary to assure that such plan will be completely coordinated with the official transportation plan of the Champaign-Urbana urban area.

2. Appoint an official technical advisory committee of three or five University personnel to confer with local planning officials and agencies regarding improvements, changes, or practices that the University should initiate to effectuate the transportation plan and sound urban development. This might include University buildings, street improvements, parking and traffic regulations, student housing, and similar subjects. This advisory committee would report to the appropriate University official or officials and attempt to secure their approval of the proposed action.

3. The appropriate University official or officials adopt a policy assuring their complete cooperation in effectuating the transportation plan.

CENTRALIZATION OF ORDINANCES AND REGULATIONS

It is very desirable that a copy of all ordinances and regulations having any relation to the transportation plan be maintained in a single location or office. This would include the material described in preceding portions of this section and any of the suggested regulations whenever officially adopted. Other regulations less directly related to assisting the transportation plan might also be included. It would be helpful to maintain copies of the latest state legislative acts authorizing the adoption of the several regulatory measures.

To facilitate the use of this centralized material, it would be desirable to prepare a history or index of each item and a summary of its basic contents and regulations.

The primary advantages of this proposed centralization would be:

1. Officials, individuals, or corporations could readily find and study the conditions regulating any improvement or development that they desire to initiate.
2. It would provide opportunities to determine if conflicts exist within regulations adopted by different legislative bodies.
3. It should assist the different legislative agencies to keep abreast of regulations they are authorized to adopt under state legislation and hopefully encourage them to adopt and enforce same.

The Champaign County Regional Planning Commission's Office is the most logical, local location to effect this centralization. It is officially created and concerned with the entire study area rather than with a single portion thereof such as the individual incorporated cities.(28)

CONCLUSIONS

From an analysis and comparison of 1965 and 1985 values for socio-economic and land use data relative to the Champaign-Urbana area, it is evident that substantial growth will occur and that added demands will be made on the transportation system by 1985. As shown in Table III-7, population will increase by 45 percent; employment, 74 percent; and number of registered vehicles, 75 percent. Population density will increase from about 740 persons per square mile in 1965 to about 1,080 persons per square mile. Personal income is expected to increase by about 59 percent.

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(28) See additional details in Interim Report F, Laws and Ordinances, Harland Bartholomew and Associates, December, 1969.

Development at a low density will prevail over the coming twenty years. The residential land acreage is anticipated to increase by 120 percent as opposed to 45 percent increase in population. The recent trend toward attracting more industry to the Champaign-Urbana area is expected to continue over the 20-year planning period, as reflected in the 420 percent increase in manufacturing land uses. Trade land area is anticipated to increase by 27 percent.

Travel in the Champaign-Urbana area is expected to increase at a higher rate than population or vehicle registration. Total internal vehicle trips are forecasted to increase by about 73 percent. Two existing interstate highways (I-57 and I-74) and a third planned route (I-72) would stimulate a high rate of increase in travel between the Champaign-Urbana area and outside areas and through the study area. Total vehicular trips are expected to increase by 85 percent. Transit trips are anticipated to increase from 4,400 trips in 1965 to 6,200 trips in 1985. Thus, transit will continue to handle a minor portion of the total daily travel in 1985. An adequate transportation system must be developed and maintained to accommodate travel demands resulting from the anticipated growth.

TABLE III-7

SUMMARY OF SOCIO-ECONOMIC, LAND USE, AND TRAVEL STATISTICS

1965 and 1985

Champaign-Urbana Urban Area Transportation Study

Item	Year 1965	 1985	Percent Change 1965-1985
Population	94,236	137,200	45
Dwelling Units	36,987	51,220	39
Employment	39,725	69,230	74
Registered Vehicles	32,076	56,250	75
Personal Income	$2,575	$4,085	59
Population Density (Persons per sq. mile)	740	1,080	45
Residential Land Area (Acres)	4,482	9,861	120
Manufacturing Land Area (Acres)	273	1,417	420
Trade Land Area (Acres)	352	448	27
Internal-Internal Vehicle Trips	253,853	439,659	73
Internal-External Vehicle Trips	32,203	78,713	144
Through Vehicle Trips	5,107	20,807	308
Total Vehicle Trips	291,163	539,179	85
Transit Trips	4,400	6,200	41

CHAPTER IV

1985 PLAN DEVELOPMENT

This chapter presents the goals and objectives of the study area, opportunities and constraints for street and highway improvements, the general procedure of developing the transportation plan, the initial test plan, the tentative plan (minimum), the alternate plan treatments, the recommended plan, the financially attainable program, and the cost estimates. The material of this chapter was summarized from Interim Report I and other work documents developed in the course of the study.

Many factors influence the development of a future transportation plan for the Champaign-Urbana Urban Area Transportation Study. Through extensive studies of present and future travel patterns as related to physical and land use characteristics, tangible elements can be measured to aid in the selection of a plan. Many other intangible influences such as community acceptance, impact on land development, aesthetics, and land use planning must also be strongly integrated into the planning process.

Planning an areawide transportation system requires optimum utilization, where practicable, of existing street and highway facilities and the implementation of new improvements. This would include the improvement of existing facilities on existing locations, the addition of new streets in areas where travel service could not be accommodated by improved existing facilities, and the extension or addition of new facilities in developing areas to provide travel and land service. In most urban areas, the possibilities are limited for the development of new highway and street facilities; therefore, careful studies that include alternate systems are necessary to develop new facilities which will provide a well-balanced transportation network.

This chapter discusses the goals and objectives of the Champaign-Urbana area, opportunities and constraints to major street development, the major steps in the development of a desirable 1985 transportation plan through alternate plan treatments, and the development of a financially attainable program. It also presents cost estimates relative to the approved plans.

GOALS AND OBJECTIVES

The general goals and objectives shall be those that meet sound transportation planning principles such as minimum disruption of neighborhoods, preservation and enhancement of existing open spaces, etc. Specific goals and objectives were determined from the inventory and forecast studies such as improvement of high accident locations, capacity deficiency studies, and others, and from the recommendations of the participating agencies.

The transportation plan should be designed to achieve the following basic objectives:

1. Coordinate all transportation planning in the urbanized area and environs.

2. Encourage urban growth into a desirable pattern which would provide the maximum economy for the study area.

3. Designate a major thoroughfare system to serve areas of probable development in the future as well as presently developed areas.

4. Provide the most economical system to meet the travel desires for the design year with proper consideration for future expansion while making the maximum practicable use of the existing street and highway system.

5. Accommodate the majority of traffic movements on relatively few, well-improved, high capacity facilities.

6. Be compatible with other elements of the comprehensive plan for the area and provide the best place for people to live, work and play.

7. Hold displacement and disruption of existing residential neighborhoods and tax base areas to a minimum.

8. Provide a street and highway system that meets the needs of the area, enhances aesthetic values, and achieves community goals while at the same time be financially attainable through the financial resources of the community.

9. Establish a flexible system which would allow for technological changes in the continuing comprehensive transportation planning process.

10. Develop a transportation system that provides for the safe and rapid movement of people and goods.

11. Establish a workable planning program.

Some of the more specific goals and objectives for the Champaign-Urbana study area include the following:

1. Make maximum use of traffic operations improvements throughout the system
2. Provide adequate capacity on all elements of the system and maintain a desirable level of service on all major streets and highways in the study area.
3. Provide for system improvement using spot intersection or link improvements.
4. Encourage limited access control on new major facilities and existing major facilities in redevelopment areas.
5. Eliminate indirect or circuitous travel routes where practicable.
6. Discourage infringement of abutting land uses on the efficiency of major thoroughfares.
7. Improve accessibility and traffic circulation in the Central Business Districts and the University of Illinois.
8. Encourage the reservation or protection of rights-of-way using the regulatory ordinance of the local jurisdiction. Zoning and subdivision ordinances are important in this respect.
9. Maintain minimum transit travel capabilities for the benefit of persons wholly dependent upon mass transit for mobility.
10. Provide air, rail, and intercity bus terminals consistent with anticipated needs.

OPPORTUNITIES AND RESTRAINTS

The determination of those elements which act as restraints or opportunities in locating or improving new or existing portions of the major street and highway system is of paramount importance in developing the transportation plan. Consideration of these factors affecting major street location results in an objective analysis of the land service, aesthetic, and planning criteria which must be evaluated prior to preparation of even rudimentary plan concepts.

Determination of those areas offering potential street development, however, does not in itself locate the required major street improvements since the situation may occur in which an area possessing this opportunity for facility development has streets with adequate traffic service ability, both for and beyond the design year.

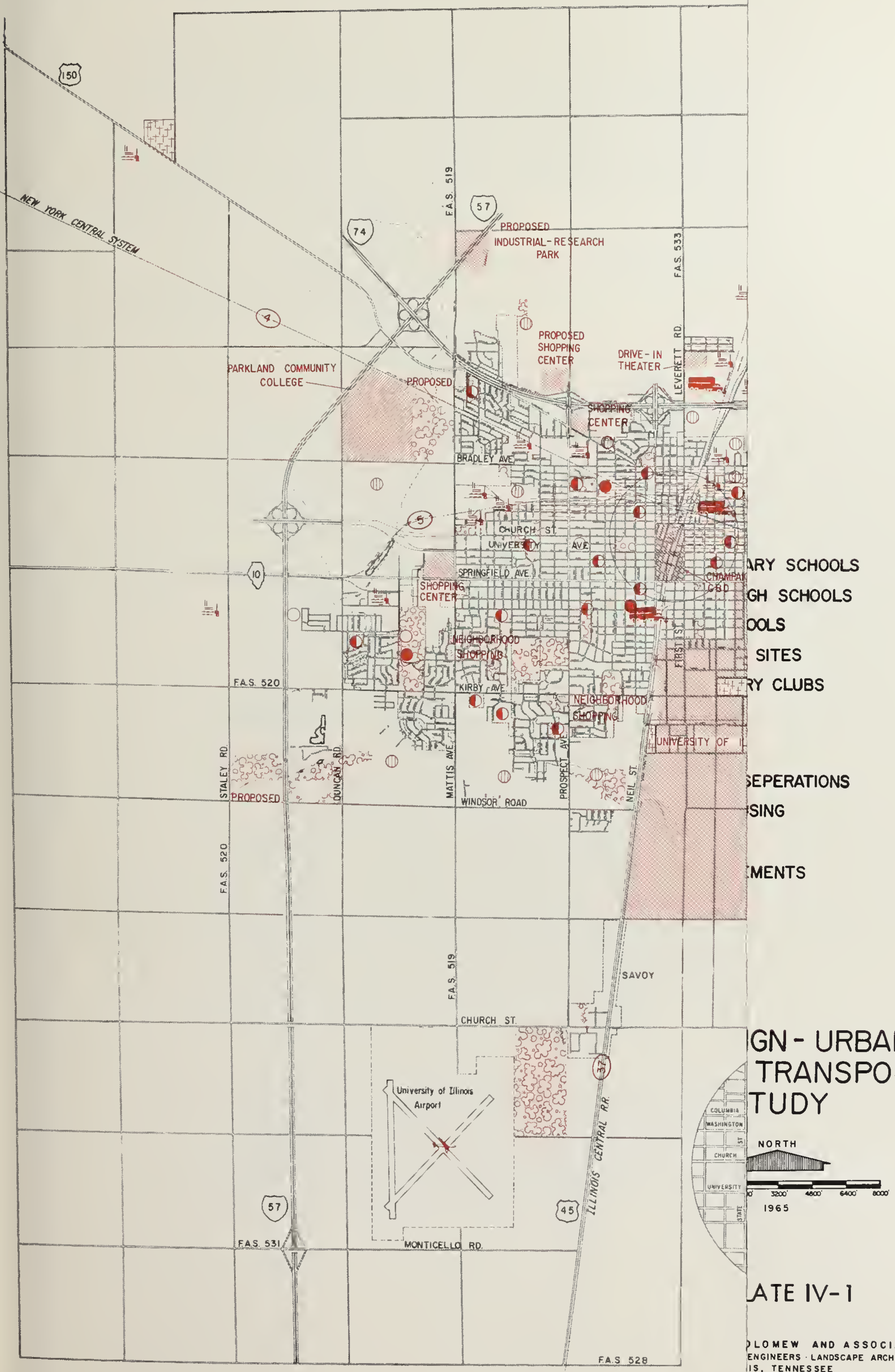
A more specific delineation of the factors that influence major street location in the Champaign-Urbana study area is presented in Plate IV-1. These include major traffic generators within the study area such as airports, truck terminals, industrial areas, and shopping and commercial facilities. Schools, colleges, the University of Illinois, hospitals, parks, and other major public and semipublic lands represent areas through and near which it is less desirable to provide a highway. Railroad tracks and intensity of train usage can cause delay to traffic and increase accidents, thus necessitating the construction of railroad grade separations. Existing railroad grade separations limit the width of widening of cross streets. Substandard housing areas, however, provide good opportunities for redevelopment and low right-of-way acquisition cost for location of needed facilities in those corridors.

SUMMARY OF PLAN DEVELOPMENT

Following the forecast of the 1985 trip patterns, the travel needs were determined by comparing the 1985 assigned traffic volumes to the existing and committed facilities to the service volumes under both a parking and a no parking condition. A no parking condition was later assumed on all major streets and highways as no major construction should be done if low cost improvements such as removal of parking could provide the required additional capacity. As an aid to further analysis of capacity deficiences, a multiple screenline analysis was made. This also was helpful in developing alternate concepts for a transportation plan for the Champaign-Urbana study area.

Four alternate plan concepts were developed in order to alleviate the capacity deficiencies and to take maximum advantage of the opportunities which affect major street locations. These plan concepts incorporated previous plans developed for the study area and the various communities within the study area. The plan concepts relied to varying degrees upon the use of high type facilities and major surface streets and highways on new locations. One concept relied basically on the maximum utilization of existing streets and minimum addition of new facilities. Preliminary analysis of the cost estimates of the plan concepts indicated that a plan offering a high level of service and incorporating existing plans for

OPPORTUNITIES AND RESTRAINTS



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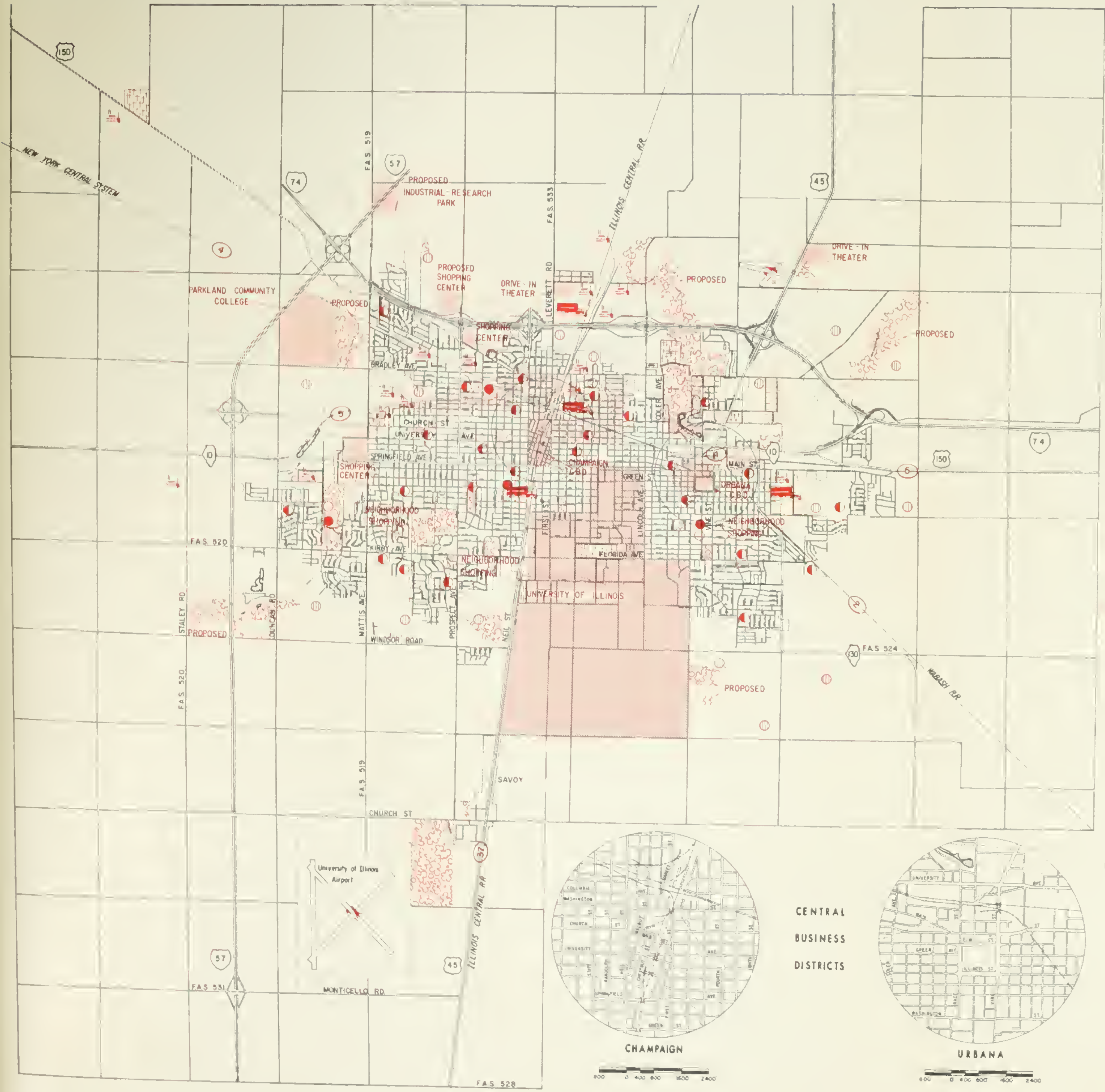
OPPORTUNITIES AND RESTRAINTS



LEGEND

- ◐ EXISTING ELEMENTARY SCHOOLS
- ● EXISTING JUNIOR HIGH SCHOOLS
- EXISTING HIGH SCHOOLS
- PROPOSED SCHOOL SITES
- PARKS AND COUNTRY CLUBS
- MAJOR INDUSTRIES
- TRUCK TERMINALS
- RAILROAD GRADE SEPERATIONS
- SUBSTANDARD HOUSING
- CEMETERY
- ② DAILY TRAIN MOVEMENTS
- AIRPORT

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

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PLATE IV-1

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

Champaign, Urbana, and the University of Illinois was beyond the fiscal capabilities of the area. All cost estimates for the plan concepts exceeded the financial resources forecasted for the study area. Discussions with local, State, and Bureau of Public Roads personnel concluded that a minimum approach to the development of the transportation plan should be followed. However, should future financial resources increase above forecast level, a desirable plan may be implemented.

The development of the transportation plan for the Champaign-Urbana urban area followed the following steps:

1. Development of Initial Test Plan--This plan was derived from the existing and committed major streets and highways, previous reports, goals and objectives, generalized capacity deficiencies by location, plan concepts, field review, consideration of land services, and discussions with the participating agencies. Development of the initial test plan also was based on minimum requirements through addition to and extension of the existing and committed classified major street system.

2. Development of Tentative Plan (Minimum Plan)--This plan is a refinement of the initial test plan. It contains the same elements as the initial test plan except for some minor differences.

3. Development of Alternate Plan Treatments--Four alternate plan treatments were analyzed. These alternates reflect the desires of the communities and the selection of alternate treatments from several proposed to determine the level of improvement to the minimum plan. One alternate tested the "Champaign CBD Plan" prepared by the consulting firm of Candeub, Flessig and Associates in March, 1968, and subsequently adopted by the Champaign City Council. Another alternate tested the influence of adding an interchange on Federal Aid Interstate Route 57 at Duncan Road Extended. The third alternate tested the influence of operational plans for streets in the Urbana Central Business District. The fourth alternate combined the first and third alternates and the elimination of a recommended extension of Goodwin Avenue south of St. Mary's Street.

4. Development of the Recommended Plan (Desirable Plan)--This plan corresponds to the fourth alternate described briefly under the alternate plan treatments. As the cost of implementing the recommended improvements exceeded the revenues of some jurisdictions in the study area, a financially attainable program was then delineated.

5. Development of the Attainable Plan (Financially Attainable Program)--This plan is the same as the recommended plan except for certain improvements that were deleted as a result of the lack of funds for implementation by some jurisdictions in the study area.

The following sections discuss in greater detail the five steps mentioned above for the development of a financially attainable program.

INITIAL TEST PLAN

The initial test plan is an initial test network developed for the purpose of assigning the 1985 forecasted traffic volumes. It is considered as the first phase of the plan development resulting from the review of the assignment of the 1985 traffic to the existing and committed facilities and other streets and highways required for land service in the anticipated development areas. Plate IV-2 delineates the existing and committed segments of the major street system where the volume to capacity ratio exceeds one (1).

The committed improvements are as follows:

East-West

1. Bradley Avenue between Prospect Avenue and Champaign eastern city limit
2. University Avenue between Broadway Avenue and I-74 spur
3. The Decatur Highway; Church Street and University Avenue to just west of State Street
4. Green Street between Prospect Avenue and Neil Street
5. John Street between Holiday Park Drive and Mattis Avenue

North-South

1. Mattis Avenue between Bloomington Road and the Illinois Terminal Railroad and Mattis Avenue between Springfield Avenue and Kirby Avenue
2. Prospect Avenue between John Street and Broadmoor Drive

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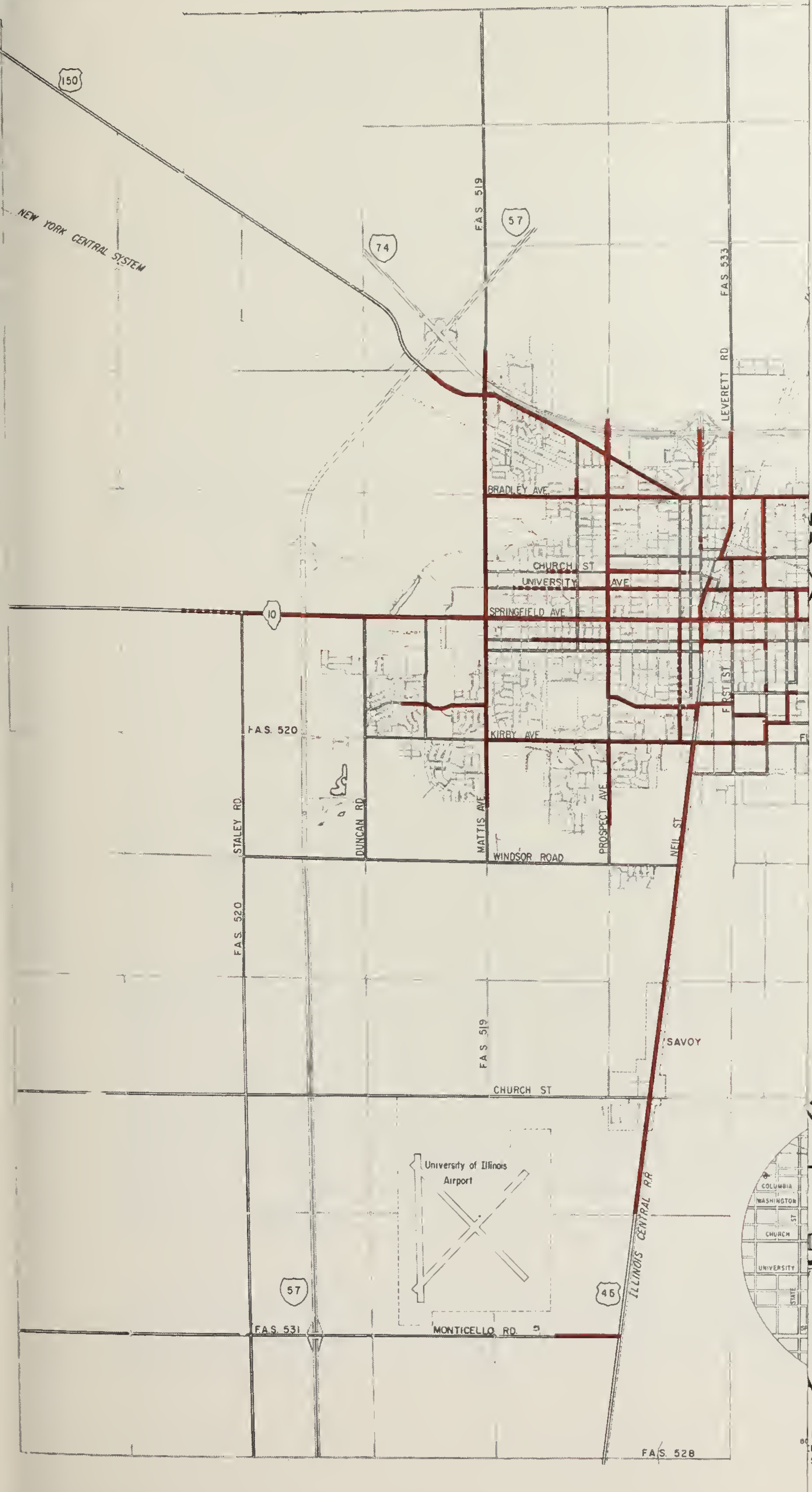

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DEFICIENT LINKS ON EXISTING PLUS COMMITTED NETWORK UNDER 1985 TRAFFIC

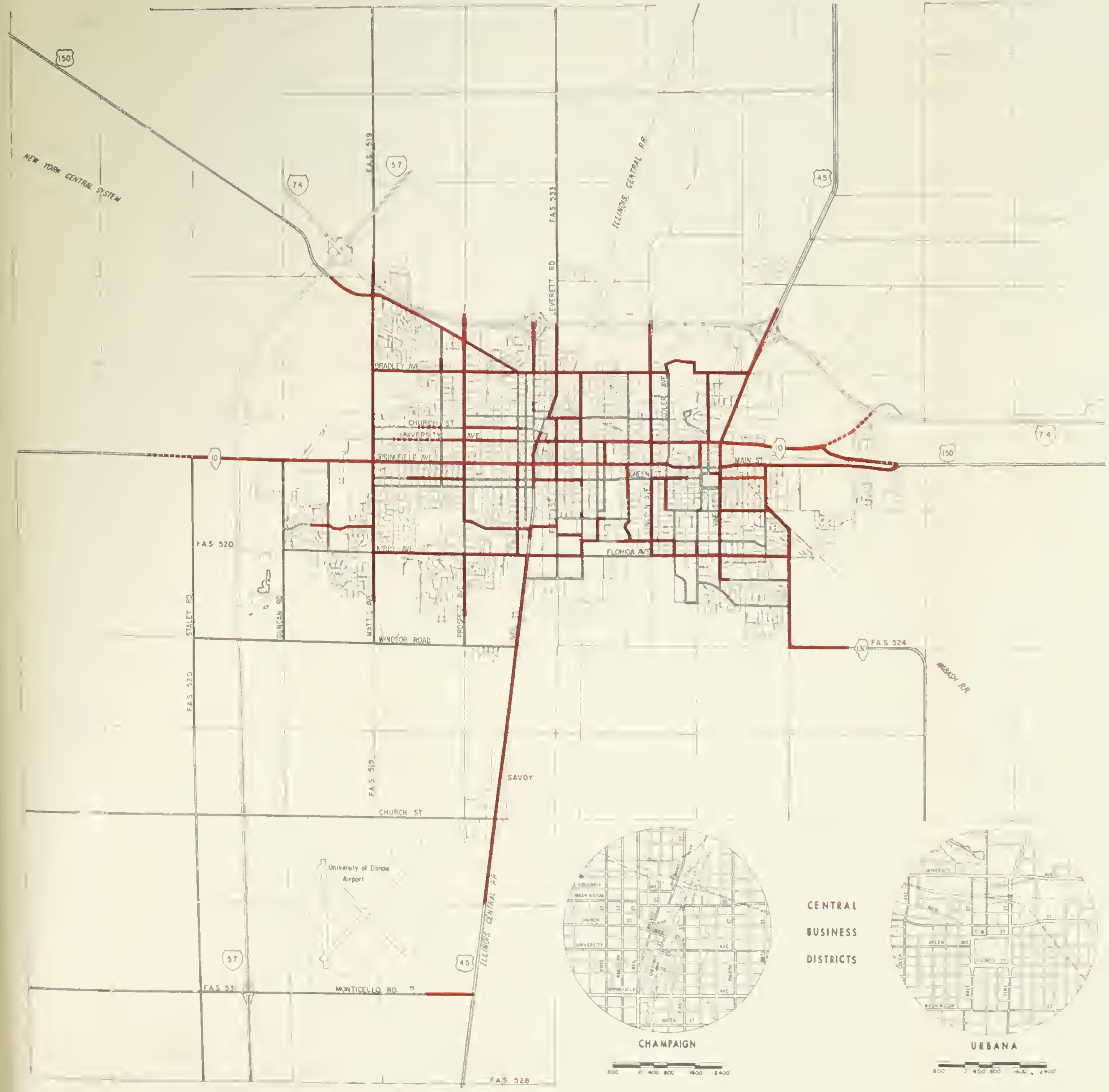

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PLATE IV-2

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS TENNESSEE

3. State Street between Bradley Avenue and Washington Street and between Springfield Avenue and Charles Street and between Hessel Boulevard and Kirby Avenue

4. Randolph Street between Bradley Avenue and Washington Street

5. First Street for about 2,100 feet south of St. Mary's Road

6. Sixth Street between University Avenue and Gregory Drive

7. Lincoln Avenue between University Avenue and Nevada Street and between Florida Avenue and George Huff Drive

Other projects that were later committed by the various jurisdictions in the study area and consequently not considered in the initial analysis were as follows:

1. Kirby Avenue between Duncan Road and Mattis Avenue

2. Washington Avenue between Cottage Grove Avenue and Dodson Drive

3. Main Street from Urbana city limit to 3,960 feet to the west

4. Peabody Drive between First Street and Sixth Street

5. Pennsylvania Avenue between Fourth Street and Goodwin Avenue

6. Illinois Route 130 from south of the Norfolk and Western (Wabash) Railroad to I-74 spur

Four alternate plan concepts were developed to meet the traffic and land service requirements of the Champaign-Urbana area. These alternate plan concepts ranged in approach from a maximum use of high type facilities (freeways-expressways) to a maximum extension of the existing major street and highway system. The four alternate plan concepts ranged in scope from a minimum traffic service level involving heavy reliance on traffic operations techniques to a high level of service through the utilization of controlled access facilities. Each alternate plan concept was designed to alleviate the capacity deficiencies, by location, and to take maximum advantages of the opportunities which affect major street and highway locations.

The plan concepts incorporated previous plans for the study area and the various communities within the study area. General cost estimates for the plan concepts indicated that all plan concepts were not within the financial capabilities of the area. The plan concept offering the lowest level of service and requiring the maximum utilization of traffic operations improvements involved the least cost. Presentation of the alternate plan concepts to the participating agencies resulted in the recommendation of using the least expensive alternate plan concept as a basis to develop the "initial test network."

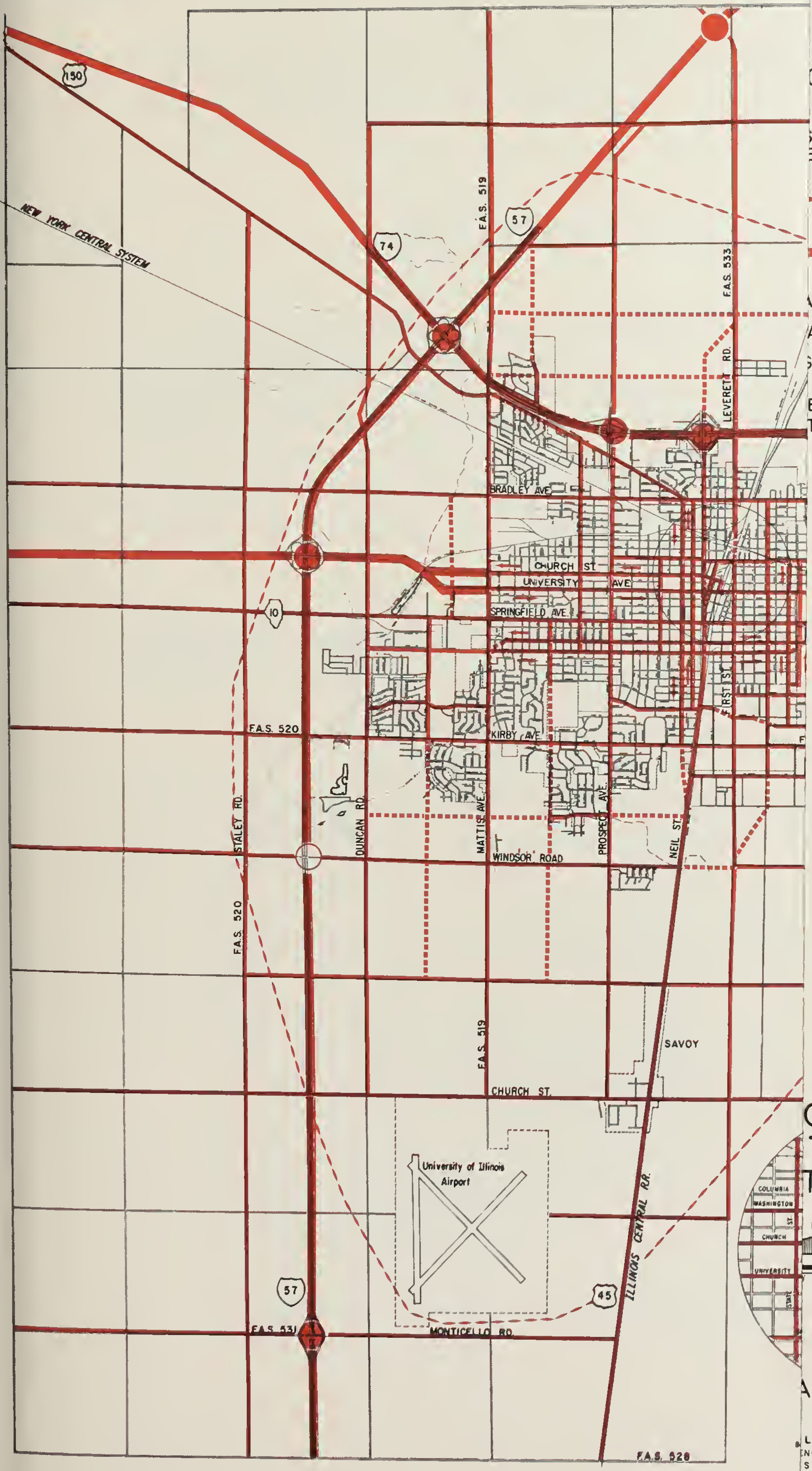
The 1985 traffic was assigned to the "initial test plan." Four iterations of capacity restraint were performed. It was determined that hand adjustment in some areas where major streets are closely spaced was required so as to better reflect the 1985 volume distribution. On closely located streets, the volumes of traffic would shift from one street to an adjacent parallel street after each capacity restraint iteration. The adjusted assigned volumes were then compared to the capacity of the existing and committed facilities for parking and no parking conditions. The demand (1985 volume) to service (capacity) ratios, or D/S ratios, for the no parking condition were developed for each link in the "initial test plan." All links having a D/S ratio of more than one (1) were considered deficient.

THE TENTATIVE PLAN (MINIMUM)

The tentative plan was derived from the initial test plan after analysis of the assignments and the capacity deficiencies resulting from the 1985 traffic distribution. Since the initial test plan met most of the objectives of the urban area, such as maximizing the use of existing streets, minimum disruption to existing neighborhoods, providing the possibility of meeting capacity requirements, providing adequate service to existing and developing areas, and is relatively minimum in cost, only minor refinements were necessary to develop a minimum plan. This minimum plan (tentative plan) then could stand on its own; and, in the event that no other improvements were demanded by subsequent analysis of alternates, the minimum plan would provide a final transportation plan for adoption and implementation by the local agencies involved. This approach to the development of a transportation plan was requested by the reviewing agencies and approved by the technical reviewing body for the transportation study.

The main difference between the initial test plan and the minimum (tentative) plan was in street classification and involved the classification of Windsor Road as a major surface facility in lieu of an expressway. Plate IV-3 presents the minimum plan. The 1985 traffic was also assigned to the minimum plan assuming capacities of streets based on no parking condition. This was to determine the extent of improvement required to provide service to the forecasted traffic at an acceptable level of service and to determine an approximate cost estimate for the plan. The improvements required generally included the provision of streets, major and collector, in undeveloped areas which are expected to develop by 1985 and the widening of existing streets to a cross section commensurate with capacity

MINIMUM PLAN



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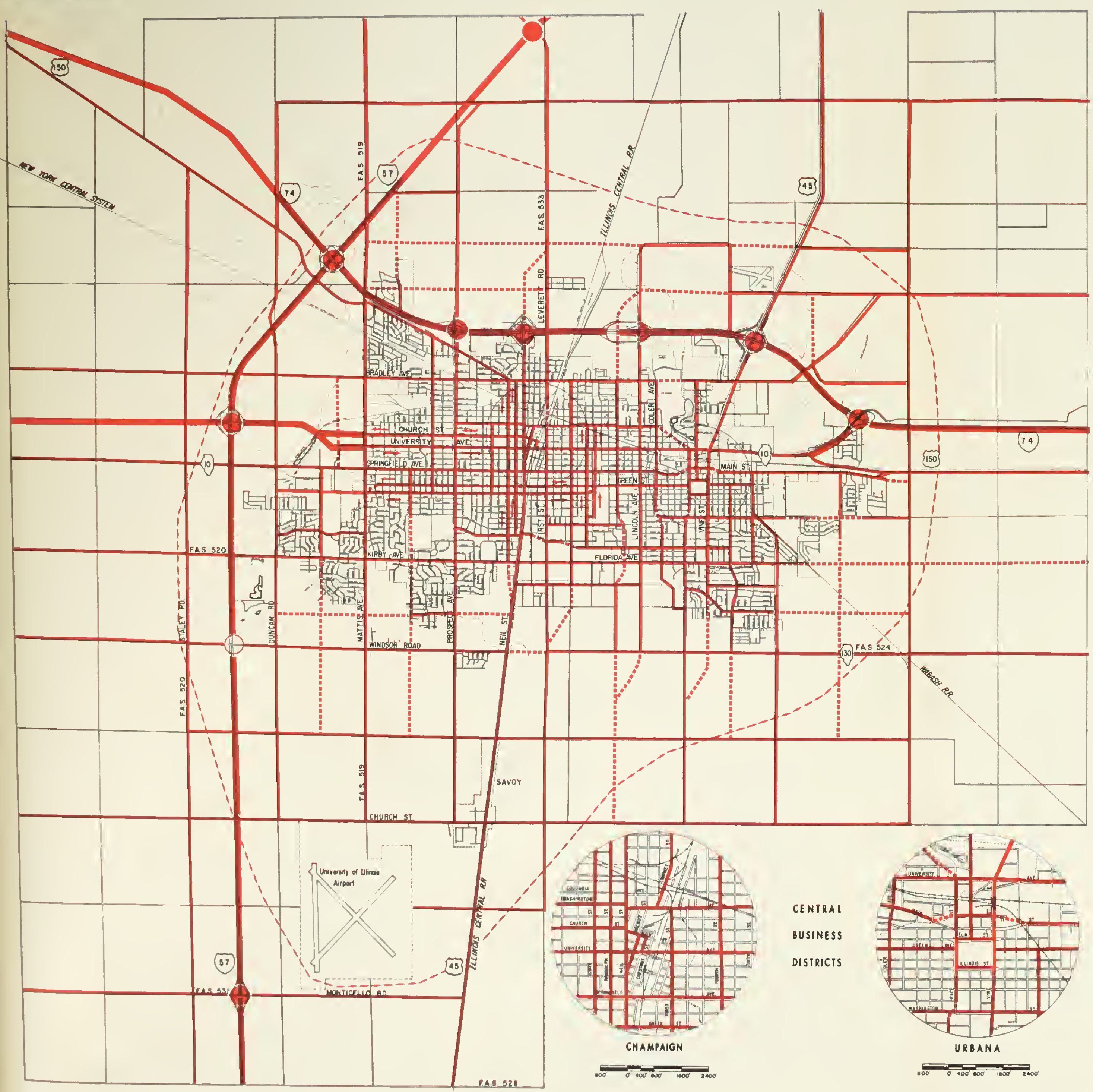
MINIMUM PLAN



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URBAN AREA TRANSPORTATION
STUDY

PLATE IV-3

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CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

requirements to accommodate 1985 traffic. The anticipated cost of development of the minimum plan was approximately $38,000,000.

THE ALTERNATE PLAN TREATMENTS

Four alternate plan treatments were developed. These alternate plan treatments were partially based on ideas and suggestions received from the Illinois Divsion of Highways and the Technical Coordinating Committee. Adjustments were made to the "minimum plan" network to include addition and deletion of links as required for each alternate. The 1985 traffic was assigned to each network. Four iterations of capacity restraint were performed on each alternate treatment. The four alternate plan treatments are indicated on Plate IV-4, and the principal features of each alternate plan treatment are discussed in the following paragraphs.

ALTERNATE 1--CHAMPAIGN CBD PLAN (A test of the Central Business District Plan for Champaign, Illinois)

This plan differs from the minimum plan by the following major items:

1. It requires the extension of Church Street along Main Street to Park Avenue with a new crossing of the Illinois Central Railroad tracks at the location of the existing Main Street pedestrian underpass.

2. University Avenue-Church Street one-way couple will be extended along Park Avenue and University Avenue eastward to Wright Street.

3. A one-way couple of Walnut Street and Chestunut Street is introduced from just south of Springfield Avenue, utilizing existing Neil Street in part to north of Washington Street thence westward to tie to existing Neil Street north of the New York Central Railroad tracks at Maple Street.

4. Neil Street is terminated just south of Washington Street with a stub into an existing minor street that provides a connection between Church Street and Washington Street.

5. It provides a connection between Market Street and the Walnut-Chestnut one-way couple.

6. It provides a connection between First Street and Neil Street north of the New York Central Railroad tracks.

7. It provides a grade separation between Market Street and the First Street-Neil Street connection.

8. The connection between First Street and Market Street (Leverett Road) is maintained through a partial interchange.

The general effects of this alternate on traffic are summarized in Table IV-1. The additions of streets in the Champaign Central Business District resulted in a relatively relaxed traffic operations. The Downtown Plan is keyed to a specific development that is quite compatible with the street pattern. This includes the location of commercial areas as well as parking facilities.

TABLE IV-1

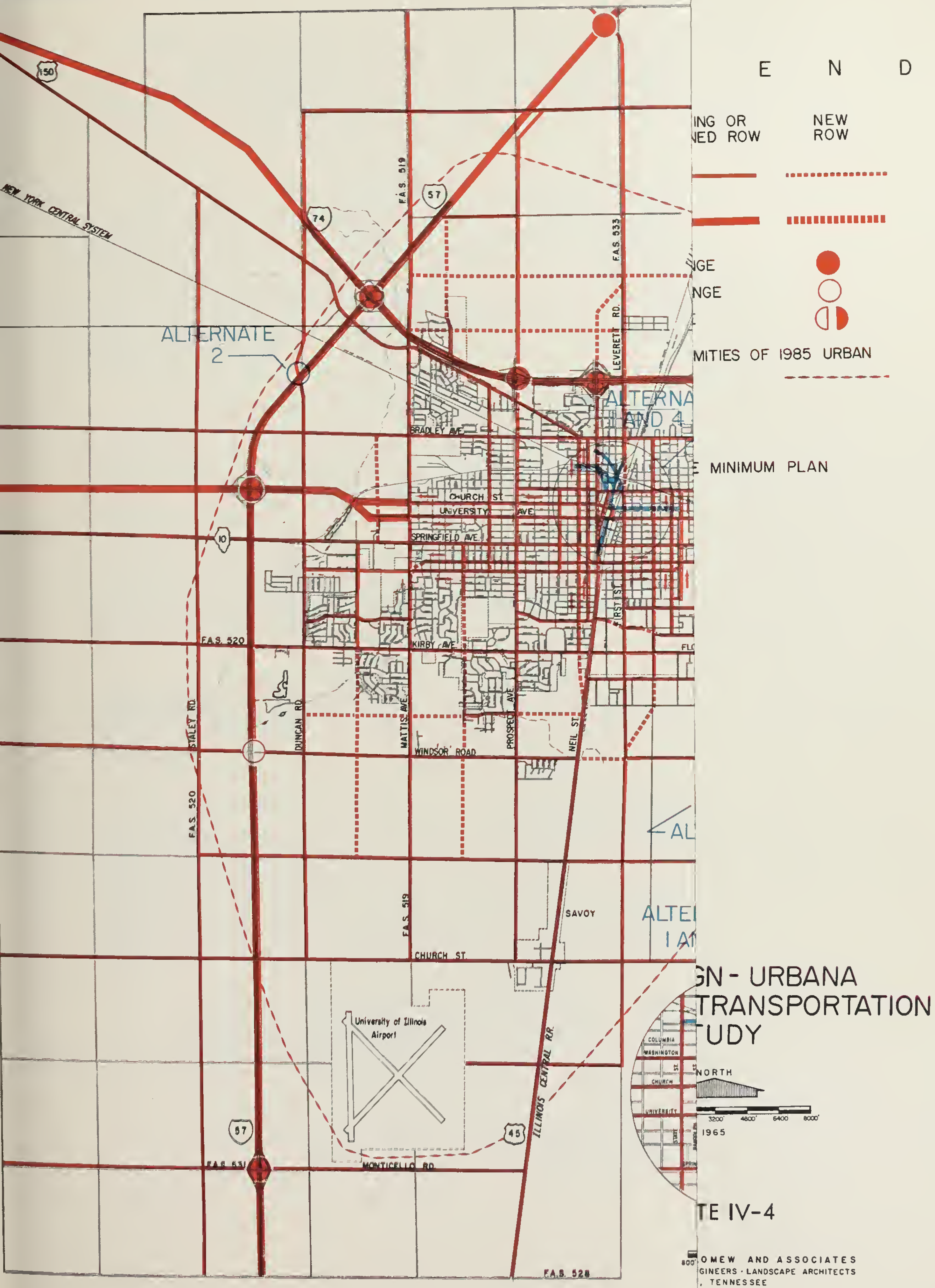
COMPARISONS OF ALTERNATE SYSTEMS

Champaign-Urbana Urban Area Transportation Study

Alternate	Total Vehicle Miles(1)	Total Vehicle Hours(1)	Average Network Speed (mph)	No. of Links with D/S* ≥ 1.0
Minimum Plan	1,902,000	73,746	25.8	418
Champaign CBD Alternate 1	1,908,000	73,309	26.0	387
I-57/Duncan Road Interchange Alternate 2	1,907,000	73,177	26.1	356
Urbana CBD Alternate 3	1,900,000	73,767	25.8	379
Combined Champaign and Urbana CBD Plans Alternate 4 (Recommended Plan)	1,898,000	74,410	25.5	433
Financially Attainable Program	1,919,000	78,305	24.5	497

* D/S refers to the desire volume to service volume ratio.
(1) Includes local street travel.

ALTERNATE PLAN TREATMENT TO MINIMUM PLAN



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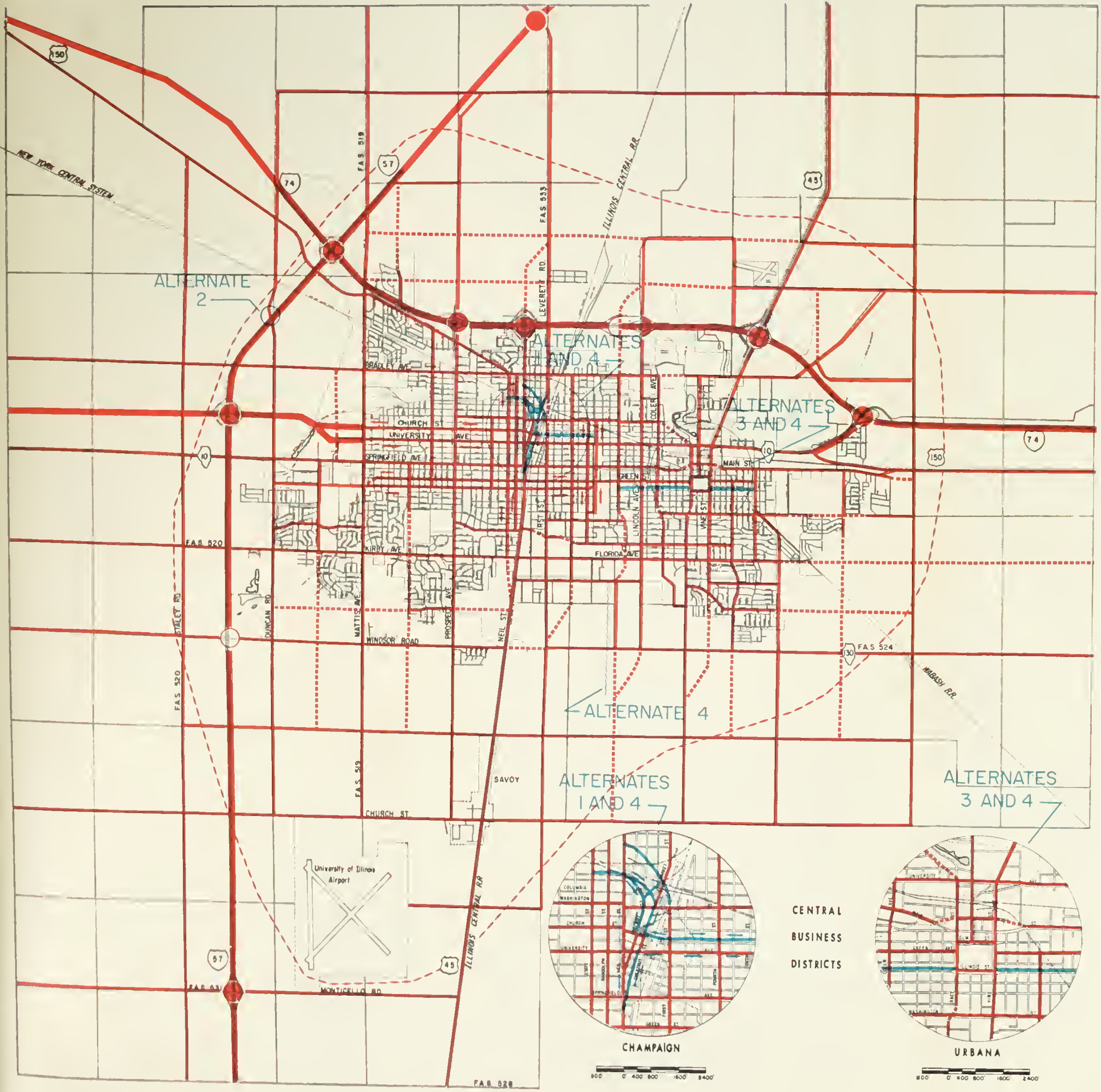
ALTERNATE PLAN TREATMENT TO MINIMUM PLAN



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ALTERNATES TO THE MINIMUM PLAN
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PLATE IV-4

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MEMPHIS, TENNESSEE

The connection of First Street to Neil Street attracted low volumes of traffic that could be accommodated on other streets. In addition, this connection requires a grade separation with the Market Street connection to the Walnut-Chestnut one-way couple due to its proximity to the railroad grade separation.

Additional cost over that required for the minimum plan would result from additional street construction required by the plan. This would include Chestnut Street from Neil to University and from Church to Washington, the First Street to Neil Street connection, the one-way couple between Washington and Neil, Neil between Maple and Bradley, State Street between Maple and Bradley, the improvement of Maple Street between Neil and State Streets, and Main Street extension to Park Avenue. Also included is the cost of track relocation.

The additional construction cost required for the above improvements is approximately $3 million. Additional right-of-way cost may add from 50 percent to 100 percent of the construction cost since these improvements will occur in an industrially and commercially developed area. Therefore, a total additional cost of from $4.5 to $6 million may be anticipated.

As a result of this analysis and due to anticipated time of development being at a time when 20 years hence would exceed 1985, this alternate was approved as an adjustment to the minimum plan.

ALTERNATE 2--I-57/DUNCAN ROAD INTERCHANGE ADDITION (A test of the influence of adding an interchange on Federal Aid Interstate Route 57 at Duncan Road Extended)

The general effects of this alternate on traffic are summarized in Table IV-1. A review of the assignment on a link-by-link basis indicated that generally the system remained the same as the minimum plan except in the northwest area of Champaign and along the I-74 links east of the Goodwin-Lincoln interchange. The volume of turning traffic at the proposed Parkland College interchange justifies the inclusion of the interchange based on traffic volumes. However, additional specific effects are observed:

1. The volume of turning movements between I-57 South and I-74 East at the existing I-57/I-74 interchange is approximately doubled. This may require an adjustment to the ramps serving this traffic that is a change from a loop in the northwest quadrant to a direct connection to provide required capacity.

2. An interchange would be located approximately one mile from either of the existing I-57/I-74 interchange and the I-57 major interchanges.

3. Weaving between interchanges, while not desirable, can be accommodated.

4. Weaving may cause a reduction in the operating speed of the interstate facility.

5. Laneage reduction may result or construction may be delayed on other elements of the system; however, it is anticipated that the classified street system will be built to specific cross sections commensurate with the classification and no eventual reduction in construction cost is anticipated.

6. The minimum plan provides sufficient capacities without the interchange.

7. The interchange construction could be deferred until further urbanization of the adjacent areas and a greater need is determined in the continuing planning process.

The anticipated cost of construction of the added interchange and the adjustment to the existing I-74/I-57 interchange is approximately $800,000.

As a result of this analysis, it was decided that the Duncan Road interchange will not be included in the 1985 transportation plan. The main considerations against its inclusion in the transportation system are its effect on interchange spacing, speed of operation on the interstate highways, and the need for reconstruction of the existing Interstate 74/Interstate 57 interchange.

ALTERNATE 3--URBANA CBD PLAN (A test of the effect of alternate operational plans for streets in the Urbana Central Business District)

This alternate involved an adjustment to the minimum plan network in accordance with requests made by the Illinois Division of Highways:

1. Closing of Elm Street from Race Street to Vine Street.

2. Closing of Broadway Avenue from Water Street to Elm Street.

3. The addition of Illinois Street to the classified system from Goodwin Avenue to Cottage Grove Road.

A portion of Illinois Street between Race Street and Vine Street had been previously included in the minimum plan.

The general effects of this alternate on traffic are summarized in Table IV-1. Illinois Street attracted substantial volumes of traffic which indicated that it is well located with respect to the centers of traffic generators and the travel desires between the University and the Urbana CBD. The majority of traffic assigned to Illinois Street appears to have been basically a shift from Green Street. Other east-west facilities in the area of Illinois Street also contributed. The inclusion of Illinois Street in the classified system appears to be desirable. While the total demand on Springfield, University, Washington, and Pennsylvania was reduced, no reduction in cost is anticipated.

The de-emphasis or closure of Green Street would result in cost reductions that would be more than offset by added cost for the development of Illinois Street. A total net increase of approximately $320,000 is anticipated. This is based on right-of-way cost being approximately 37 percent of construction cost.

As a result of this analysis, this alternate was approved as an adjustment to the minimum plan.

ALTERNATE 4--COMBINED CHAMPAIGN-URBANA CBD PLANS (A test of the influence of the addition of the Champaign CBD and Urbana CBD Plans as described in Alternates 1 and 3 above)

In addition, based on comments made by the University of Illinois, this alternate would include the elimination of a proposed extension of Goodwin Avenue south of St. Mary's Street. The general effects of this alternate on traffic are summarized in Table IV-1.

The assignment comparisons indicated that minimal changes of volume occurred in the areas outside the Champaign Central Business District and University Avenue to Wright Street and Illinois Street between Goodwin Avenue and Illinois Route 130 (Cottage Grove).

Variations in traffic volumes were similar to those previously noted for Alternate 1 (Champaign CBD Plan) and for Alternate 3 (Urbana CBD Plan). The average volume of traffic assigned to Illinois Street is as high as 17,000 vehicles a day and indicated the desirability of the inclusion of Illinois Street in the classified street system. A comparison of the 1985 average assigned volumes with the 1985 average assigned volumes to Alternate 1 (Champaign CBD Plan) indicated no significant changes in the Champaign CBD area and immediate vicinity. The same was observed for the Urbana CBD and vicinity as a result of the comparison of the 1985 average assigned volume to this alternate plan with the 1985 average assigned volume to Alternate 3 (Urbana CBD Plan).

The effects of this alternate on the Champaign and Urbana Central Business Districts' traffic operations are similar to those noted in Alternate 1 (Champaign CBD) and Alternate 3 (Urbana CBD).

The additional cost to develop this alternate is the sum of the additional costs (above the cost of development of the minimum plan) for Alternate 1 (Champaign CBD) and Alternate 3 (Urbana CBD) less the cost of Goodwin Avenue south of St. Mary's Road, or approximately $6 million.

As a result of this analysis, this alternate was approved as an adjustment to the minimum plan. In addition to the alternates, a "Southern Freeway" facility was added to the plan as a long-range plan element and not a part of the 1985 transportation plan. The freeway was located south of AT and T Road and east of Myra Station Road between I-57 and I-74. If implemented, this facility would require interchanges with I-57 and I-74 and would therefore be subject to approval by the Bureau of Public Roads.

The net result was termed the "Recommended Plan." Cost analysis and comparison of cost with available revenues were conducted to establish the feasibility of the Recommended Plan. The Recommended Plan was not feasible when the plan needs were compared with available funds for each jurisdiction in the Champaign-Urbana study area. Table IV-2 presents a summary of cost estimate for the Recommended Plan. The plan discussed in the following section (Financially Attainable Program) was designed to present an attainable plan by all jurisdictions. A summary of estimated cost of the Financially Attainable Program is presented in Table IV-3. Under this plan, Champaign City and Township are expected to have a small deficit of about $1.7 million. This deficit was not considered to be unreasonable by the affected jurisdiction. The City of Champaign had a $2 million surplus in 1968.(29)

FINANCIALLY ATTAINABLE PROGRAM

This plan is the same as the fourth alternate, combined Champaign-Urbana CBD Plans, except for certain improvements that were deleted as a result of the lack of funds. Nineteen roadway segments were deleted from the Recommended Plan (Alternate 4) in all sections of the transportation area. Also, adjustments were made reflecting the decrease in capacity over some roadway sections necessitated by lack of funds to execute the necessary improvements to existing cross sections. The financially attainable program is presented later in this report.

The general effects of this plan on traffic are summarized in Table IV-1. Compared to the minimum plan, this alternate showed an increase of 17,000 vehicle miles of travel on the

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(29) See additional details in Interim Report I, Trip Assignments, Alternate Treatments, Harland Bartholomew and Associates, December, 1969.

TABLE IV-2

SUMMARY OF ESTIMATED COST

RECOMMENDED PLAN

Champaign-Urbana Urban Area Transportation Study

Jurisdiction	Plan Needs*	Committed Improvements	Total Needs*
State of Illinois	$ 6,864,000	$ 2,704,000	$ 9,568,000
Champaign County	4,925,000	--	4,925,000
Champaign City and Township	9,932,000	4,885,000	14,817,000
Urbana City and Township	9,712,000	931,000	10,643,000
University of Illinois	2,392,000	--	2,392,000
Hensley, Somer, and Tolono Townships	652,000	--	652,000
TOTAL	$34,477,000	$ 8,520,000	$42,997,000

*These values are estimated costs for scaled mileage of improvement and unit costs as used for cost estimates of a similar future construction.

TABLE IV-3

SUMMARY OF ESTIMATED COST

FINANCIALLY ATTAINABLE PROGRAM

Champaign-Urbana Urban Area Transportation Study

Jurisdiction	Plan Needs*	Committed Improvements	Total Needs*
State of Illinois	$ 5,669,000	$ 2,704,000	$ 8,373,000
Champaign County	4,925,000	--	4,925,000
Champaign City and Township	5,834,000	4,885,000	10,719,000
Urbana City and Township	5,460,000	931,000	6,391,000
University of Illinois	2,248,000	--	2,248,000
Hensley, Somer and Tolono Townships	--	--	--
TOTAL	$24,136,000	$ 8,520,000	$32,656,000

*These values are estimated costs for scaled mileage of improvement and unit costs as used for cost estimates of a similar future construction.

total system and an increase of about 4,559 vehicle hours of travel on an average day in 1985. This results in decreased user benefits because of the increase in both vehicle miles and vehicle hours. The average network speed also decreased from 25.8 for the minimum plan to 24.5 for this alternate.

There was also a change in the total link capacity deficiency. For the minimum plan, there was a total of 418 links in the system with capacity deficiency while in this alternate there were 497. However, the minimum plan had 50 links with a volume-to-capacity ratio of 1.5 or above as compared to 34 links in the attainable program plan. It should be pointed out that the minimum plan contained 2,053 links as compared to 1,939 for the attainable program plan.

The assignment comparisons for Alternate 4 and the attainable program indicated various volume changes on various roadway sections. Generally, more links showed volume increases than volume decreases. This is due to the fact that several street sections were deleted as was indicated earlier. These changes in volumes did not require laneage reduction or increase on the affected facilities. The only exceptions are Washington Street between First Street and Walnut Street where the average assigned traffic volume increased from 15,700 in Alternate 4 to 20,900 in the attainable program, Green Street between Wright Street and Goodwin Avenue, and Coler Avenue between Illinois Street and Washington Street.

The effects of this alternate on the Champaign and Urbana Central Business Districts' traffic operations are generally similar to those noted in Alternate 4.

The deletion of the First Street-Neil Street connection and Walnut Street and Chestnut Street one-way couple connection to First Street resulted in a more even distribution of traffic on the Walnut Street-Chestnut Street one-way couple and better utilization of the available capacity of the Walnut Street-Chestnut Street connection to Neil Street. This indicated that the deletion of the First Street and Neil Street connection and the Walnut-Chestnut connection to First Street did not result in any serious ill effects on the Champaign CBD and is duly justified considering the shortage of funds in the Champaign city jurisdiction.

As was the case with Alternate 4 (Combined Champaign and Urbana CBD Plans), Illinois Street attracted substantial volumes of traffic which indicated that it is well located with respect to the centers of traffic generators and the travel desires between the University and the Urbana CBD.

Additional cost would be required for additional street construction required by the financially attainable program. This would include Washington Street between First Street and Walnut Street, Green Street between Wright Street and Goodwin Avenue, and Coler Avenue between Illinois Street and Washington Street in Urbana.

The additional construction cost required for the above improvements is approximately $150,000. Additional right-of-way cost may add from 50 percent to 100 percent of the construction cost since these improvements will occur in a highly developed area. Therefore, a total additional cost of about $250,000 may be anticipated. A detailed cost estimate for the financially attainable program will be presented later in this chapter.(30)

COMPARISON OF ALTERNATE PLANS

Overall effects of the alternate plans as related to vehicle miles, vehicle hours, and average speeds are listed in Table IV-1. The financially attainable program had the highest vehicle miles and vehicle hours, thus resulting in the least amount of user benefits. It also provided the lowest average network speed, signifying that it provided the lowest level of service. It also had the highest number of links with a volume to capacity ratio (D/S) of over 1.00. Generally, all alternates had approximately the same vehicle miles and slightly varying vehicle hours. Alternate 2 (I-57/Duncan Road Interchange Alternate) displayed the lowest vehicle hours and possibly the highest user benefits. The recommended plan (Alternate 4) showed the least vehicle miles but slightly higher vehicle hours than the tentative plan and Alternates 1 through 3.

The specific effects of each alternate on traffic operations and on the proposed improvements were discussed earlier while describing the alternate plans.

As was indicated earlier in this chapter, a minimum plan approach was followed in developing the recommended transportation plan for the Champaign-Urbana study area. Basically, there is little difference in the alternate plans analyzed as far as protection of existing neighborhoods is concerned. All five plans were aimed at providing good access to the major traffic generators in the area and encouraging an orderly growth pattern. The plans generally preserve and serve open space development and social and community facilities such as schools, parks, colleges, etc., in accordance with general land use forecasts and existing comprehensive plans. The tentative plan (minimum plan), however, provides limited flexibility to accommodate major change in land use patterns in that a no parking condition was assumed and in that the proposed capacity of the elements of the plan for the critical areas of capacity deficiency only satisfy the forecasted 1985 traffic demand. It should be pointed out that all projects cannot be constructed to meet the needs by 1985. In fact, most improvements have to be constructed for the years 1990 to 2000 traffic and land service needs in keeping up with policy that requires a design hour volume twenty (20) years from construction year.

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(30) Ibid.

In addition to the general effects of the minimum plan, Alternate 1--Champaign CBD Plan, meets the specific goals of the Champaign Development Corporation. It provides excess capacity beyond 1985 and improves traffic circulation in the Champaign central area. It also provides sufficient parking and enhances the economic potential of the downtown area. It provides for open space land use thereby enhancing the social and community values for the area. The downtown street and traffic parking facilities tend to increase the safety in traffic operation and tend to conform with a potentially more efficient land use within the Central Business District.

In addition to the general effects of the minimum plan, Alternate 2--Duncan Road Interchange Addition, provides alternate route service to the proposed Parkland College development. It reduces travel on some of the surface streets in the area, such as Bradley Avenue, and maximizes the use of existing freeways. Thus, it increases safety and amenity in affected areas.

In addition to the general effects of the minimum plan, Alternate 3--Urbana CBD Plan, provides the proposed Water Street Bypass around the nothern side of the central area. It also allows the contiguous expansion of the Urbana CBD to the north with de-emphasis on the use of Main Street for through traffic between Vine and Race Streets. The proposed Illinois Street improvement provides a well-located facility between the University of Illinois and the Urbana Central Business District. It meets the goal of the Urbana area and complements the pedestrian mall idea in the Urbana CBD. Pedestrian safety will be increased, and good access will be provided to the commercial facilities in the Urbana CBD.

The Combined Champaign-Urbana CBD Plans combine the advantages of the minimum plan and Alternates 1 and 3. It meets the goals and desires of the Champaign area, the Urbana area, and generally conforms to the University of Illinois master plan.

The Financially Attainable Program tends to maximize land and traffic service with the forecasted revenues of the study area. It thus satisfies the objective of developing a financially feasible transportation plan. However, it provides inferior service to land expected to develop by 1985. It contains some of the elements of the Champaign and Urbana CBD Plans and consequently provides less flexibility and less reserve capacity than the Combined Champaign-Urbana CBD Plans.(31)

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(31) Ibid.

1985 PLANS

As a result of studies and testing of the alternate plan treatments; reviews by the Technical Committee; and suggestions, ideas, and opinions of the local agencies; the 1985 transportation plans were developed. In developing the 1985 transportation plans, consideration was given to the goals and objectives of the area as well as to sound planning principles.

The 1985 transportation plans consist of the Recommended Plan (Alternate 4) and the Financially Attainable Program. The Recommended Plan is shown on Plate IV-5, whereas the Financially Attainable Program is presented on Plate IV-6.

The Recommended Plan is the overall goal for implementation based on actual needs, whereas the Financially Attainable Program represents the improvements that the various jurisdictions in the study area can afford. In essence, the Financially Attainable Program could be looked upon as a stage construction step in the attainment of the Recommended Plan.

ELEMENTS OF THE TRANSPORTATION PLANS

The "Recommended Plan" and the "Financially Attainable Program" contain two basic elements. These are as follows:

1. Traffic service needs

2. Land service needs.

As the area grows and traffic volumes on land service routes increase, these land service routes become traffic service facilities. Facilities such as freeways and expressways provide basically for traffic service needs. Surface type routes with at-grade access to abutting property can serve as both land service and traffic service facilities. The Recommended Plan provides more facilities for land service in the outlying portions of the study area (basically those areas presently undeveloped and lying outside the corporate limits) than the Financially Attainable Program. Only through complete integration of the high type facilities with major, collector, and local streets and highways will traffic and land use requirements be served in the most efficient and economical manner.

In addition to the committed improvements at the present time, the following is a listing and discussion of those routes in the area that will require improvement within the planning period to meet the traffic service needs and that are common to both the Desirable and the Attainable transportation plans.

1. Bradley Avenue between Duncan Road and Prospect Avenue and between the Urbana Western City Limits and U.S. 45--This route is presently operating at above capacity. It serves as a major east-west facility and provides service to parks, shopping centers, and the proposed Parkland College Development. Anticipated 1985 traffic volumes of up to 15,000 vehicles per day would necessitate its improvement to a four-lane facility. It is recommended that a railroad grade separation be constructed at the Illinois Central Railroad if funds become available. The existing 37 daily train movements crossing Bradley Avenue and the forecasted 1985 average daily traffic of 13,300 vehicles per day on Bradley Avenue results in a relatively high incidence of exposure of the vehicular traffic to railroad traffic.

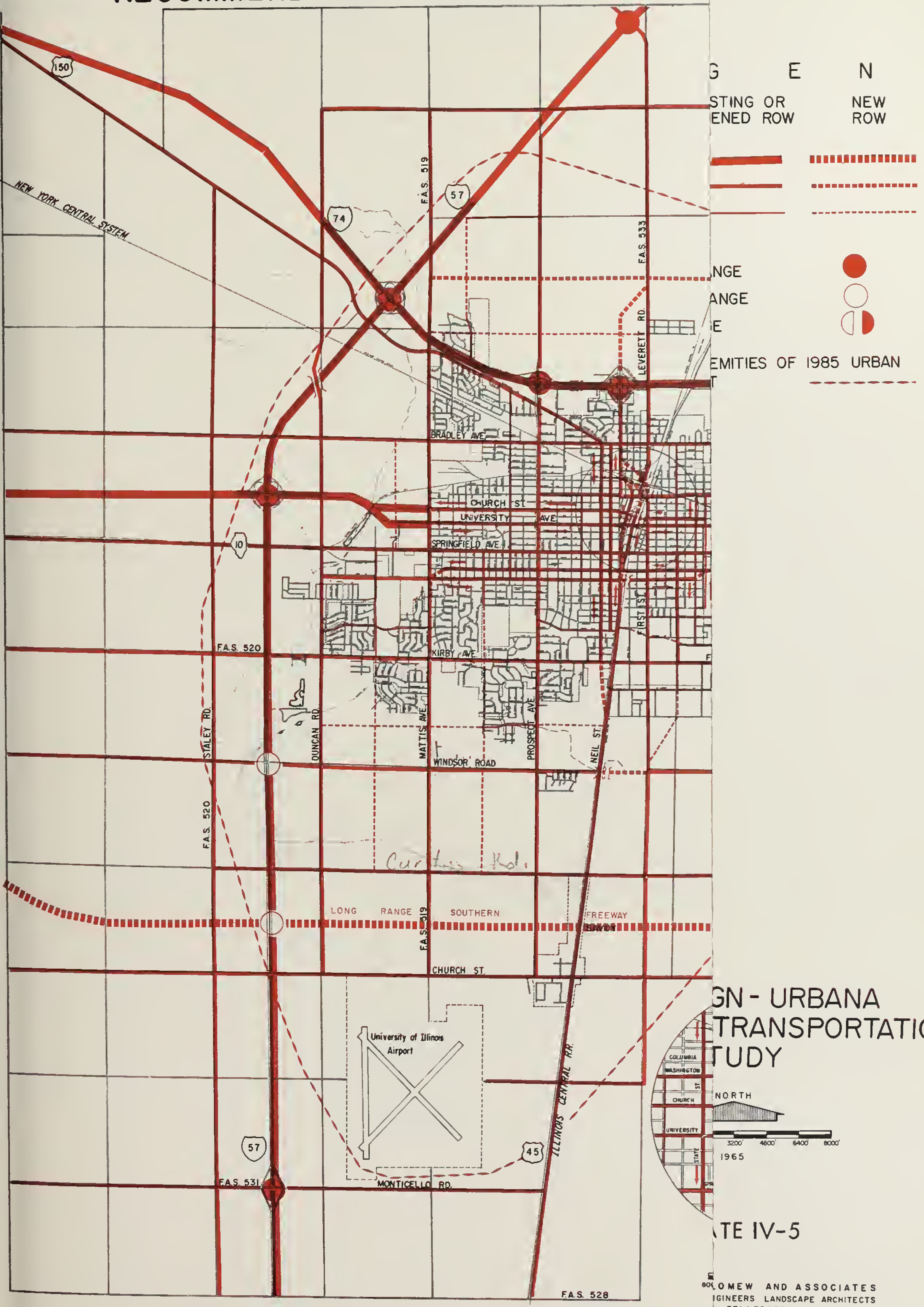
2. Main Street-Park Street Connection--Improvement of this route requires the construction of a new connection between Main Street and Park Street, with most of the improvement on structure because of the Illinois Central Railroad. Implementation of this improvement as a part of the one-way couple arrangement involving University Avenue results in better traffic circulation in the Champaign CBD and in relief to University Avenue. The 1985 assigned traffic to this improvement is expected to be about 9,200 vehicles per day.

3. Springfield Avenue-Water Street-Main Street--This facility traverses the study area from east to west, thus providing a major continuous facility through the area. The sections of Springfield Avenue between Duncan Road and Sixth Street and between Goodwin Avenue and Lincoln Avenue, as well as Main Street east of Race Street, are presently operating above capacity. In addition, the 1985 volumes are expected to reach up to about 13,000 vehicles per day. Improvement of this route to a four-lane facility is recommended. A new connection between Water Street and Main Street will provide a bypass around the Urbana CBD and help materialize the pedestrian mall idea in the Urbana CBD. The Water Street-Main Street connection involves a railroad grade separation with the Wabash Railroad.

4. Illinois Street between Lincoln Avenue and Cottage Grove Avenue--This facility connects the University of Illinois and the Urbana CBD. A 1985 average daily traffic volume of about 17,000 is forecasted, thus requiring its improvement into a four-lane divided facility.

5. Kirby Avenue-Florida Avenue--The improvement of Kirby Avenue to a four-lane divided facility between Duncan Road and Holiday Park Drive was committed by the City of Champaign late in 1969. This section serves a fast

RECOMMENDED PLAN



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RECOMMENDED PLAN

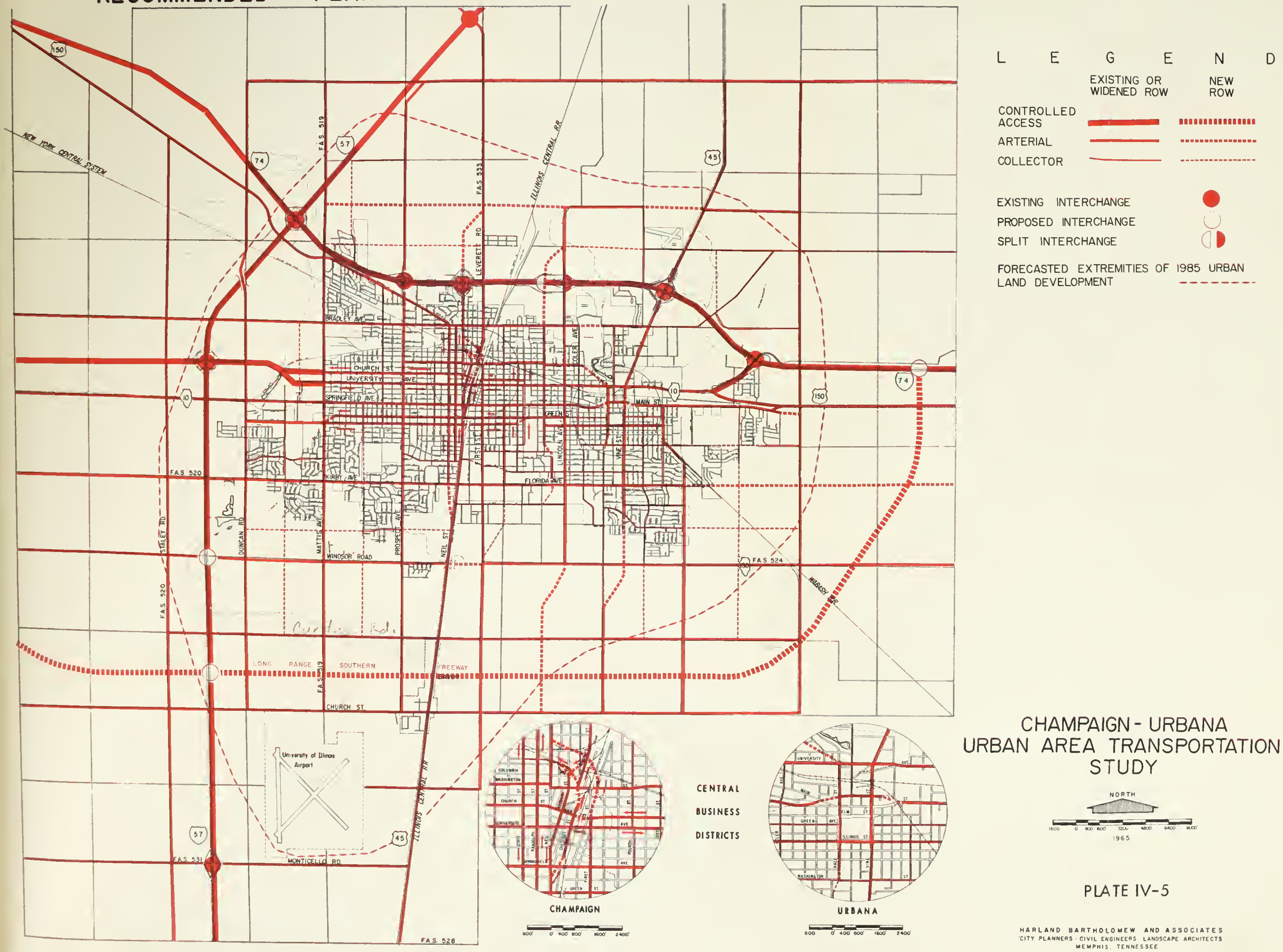

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PLATE IV-5

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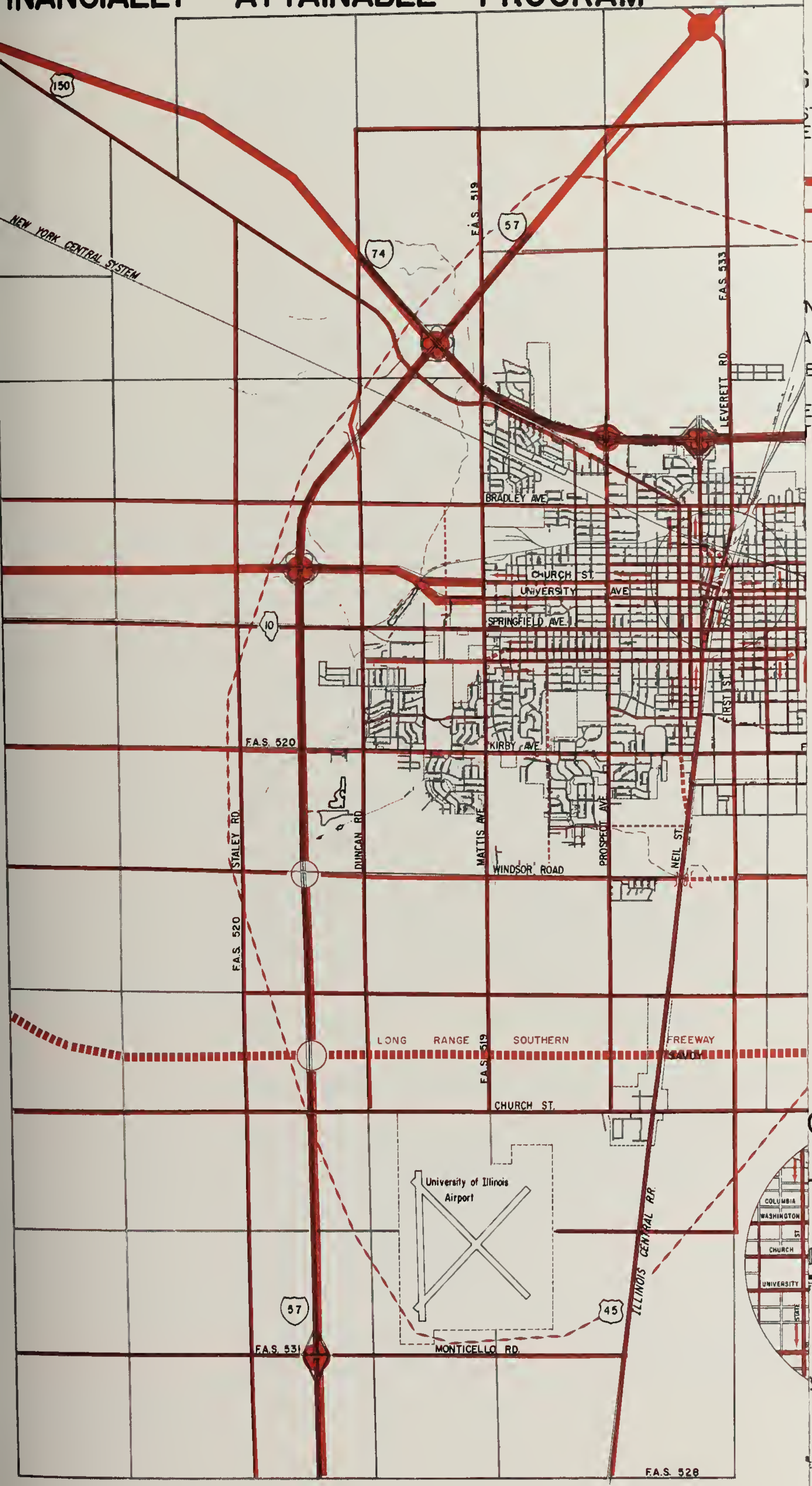
MEMPHIS, TENNESSEE

FINANCIALLY ATTAINABLE PROGRAM



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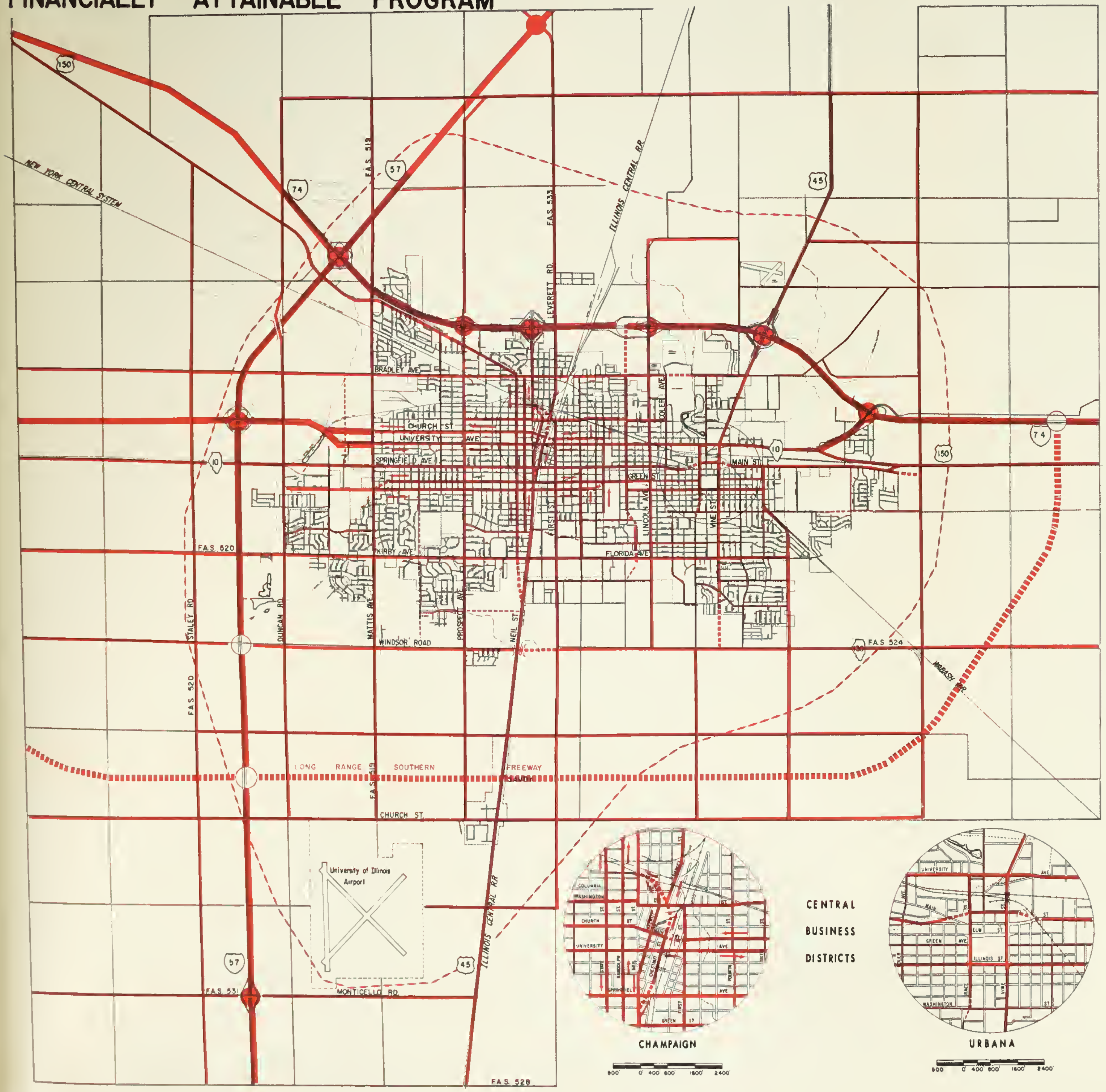
FINANCIALLY ATTAINABLE PROGRAM



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COLLECTOR	─	┄

EXISTING INTERCHANGE	●
PROPOSED INTERCHANGE	○
SPLIT INTERCHANGE	◐
FORECASTED EXTREMITIES OF 1985 URBAN LAND DEVELOPMENT	- - - -

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1600 0' 800 1600 3200 4800' 6400 8000'

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PLATE IV-6

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developing area and is expected to handle about 10,900 vehicles per day in 1985. The section of Florida Avenue between Lincoln Avenue and Vine Street is presently operating at above capacity and is anticipated to have a 1985 average daily traffic volume of about 17,600 vehicles per day. It is recommended that this section of Florida Avenue be widened to a four-lane divided facility.

6. Windsor Road between Staley Road and Philo Road--This route would provide relief to the existing major east-west travel facilities in the study area and thus would minimize the development requirements within the presently developed areas. Widening to a four-lane divided facility between Interstate Route 57 and Russell Street and between Vine Street and Philo Road and to a six-lane divided facility between Russell Street and Vine Street would be necessitated by the forecasted 1985 traffic volumes of up to 22,000 vehicles per day. The latest capacity values (average daily traffic) accepted by the Illinois Division of Highways indicate that a four-lane roadway may be sufficient to handle the anticipated 1985 traffic volumes. If this cross section (4 lanes) is adopted, then it would be desirable to require sufficient right-of-way width at major intersections to permit the construction of additional turning lanes as required at the time of final design. Implementation of this improvement requires that the full right-of-way width be purchased, that one-half of the cross section be built between Prospect Avenue and Philo Road in the first five-year period (1970-1975), and that the construction of the full cross section be completed between 1976 and 1985.

7. Staley Road between Bloomington Road (U.S. 150) and Illinois Route 10--Development of this route to a two-lane collector highway should be concurrent with area development. This improvement is needed to provide an adequate (to replace the existing 14-foot pavement) continuous north-south facility west of Interstate Route 57.

8. Duncan Road between Windsor Road and 1.5 miles north of Bradley Avenue--Construction of a structure at I-57 and construction of a 30- to 44-foot pavement on existing location to accommodate the 1985 volumes of up to 12,300 vehicles per day, is necessary to provide a continuous north-south facility just east of I-57. It is recommended that a minimum desirable right-of-way width of 80 feet be acquired in order to allow for widening beyond 1985.

9. Russell Street between Armory Avenue and Windsor Road--Extension of Russell Street south of Armory Avenue on new right-of-way will be needed

to serve the residential development in the area and to provide route continuity to the south. It is recommended that an 80-foot right-of-way width be purchased although the 1985 projected traffic of about 5,300 vehicles per day could be handled on a two-lane pavement within a 60- to 70-foot right-of-way width.

10. Prospect Avenue between Bloomington Road and Windsor Road--Improvement of this route to four lanes will be necessary to accommodate the 1985 volumes of up to 14,000 vehicles per day. The section between Bradley Avenue and Hessel Boulevard is presently operating at above capacity. The segment between John Street and the city limit is committed for improvement by the City of Champaign.

11. Neil Street between Airport Drive and Birch Street--The volume to capacity ratio on some segments of this route presently exceeds 1.00. The 1985 traffic volumes of about 10,500 to 13,000 vehicles per day require its improvement to a four-lane facility with the segment between St. Mary's Road and Airport Drive divided. Improvement of this route also involves a grade separation at Windsor Road. The section of Neil Street between Maple Street and Eureka Street needs intersectional improvement in order to accommodate the 1985 projected traffic volume and in order to complement the Chestnut Street-Walnut Street one-way couple improvement.

12. Chestnut Street-Walnut Street One-Way Couple--The adoption of this one-way couple provides relief to Neil Street and First Street. It results in smoother traffic circulation in the Champaign CBD. It also meets the specific goals of the Champaign Development Corporation. The 1985 traffic is anticipated to be about 13,000 vehicles per day on each street of the one-way couple. This improvement involves new right-of-way for Chestnut Street between Main Street and Washington Street and for Chestnut Street and Walnut Street between Columbia Street and Maple Street.

13. Goodwin Avenue between I-74 and Pennsylvania Avenue--The improvement of this facility will involve its widening to four lanes between Bradley Avenue and Springfield Avenue and between Nevada Street and Pennsylvania Avenue. The segment between Bradley Avenue and I-74 will be on new right-of-way to provide route continuity for north-south travel. As land development intensifies north of Bradley Avenue, it might be necessary to provide a partial interchange with I-74 in order to relieve Lincoln Avenue. The right-of-way width and frontage road requirements have already been provided for by the Illinois Division of Highways.

14. Broadway Avenue between Country Club Road and University Avenue--This route provides access and land service to the Fair Grounds and to the Urbana CBD. The 1985 traffic volume of about 8,000 vehicles per day requires its improvement to a 30-foot pavement.

15. State Highway 130--The alignment of this route would follow Myra Station Road in the north and U.S. 150 to the west until it connects with the I-74 spur. This route was recently committed by the Illinois Division of Highways for improvement to a major highway section of 24-foot pavement width on a 120-foot right-of-way width. The 1985 traffic is projected to be about 6,000 vehicles per day.

In addition to the preceding routes, other extensions and additions to the present street and highway system have been included in Plates IV-5 and IV-6. Both the Recommended Plan and the Financially Attainable Program include a long-range southern freeway located between AT and T Road and Church Street in Savoy.

SYSTEM MILEAGE

The aggregate length of all routes in the Recommended Transportation Plan totals 288 miles (see Table IV-4, System Mileage--Recommended Plan and Financially Attainable Program). This represents about 35 miles on new right-of-way and 253 miles on existing or widened right-of-way. Expressways and freeways total 32 which represents about 11 percent of the total street mileage. Arterial streets and highways account for 201 miles and 70 percent of the total mileage. The remaining 55 miles, or 19 percent of the total, are collector streets and highways.

Table IV-4 presents similar data for the Financially Attainable Program, also. The expressways and freeways mileage is the same for both the Recommended Plan and the Financially Attainable Program. The Financially Attainable Program, however, had 189 miles of arterial streets and highways and 41 miles of collector streets and highways.

1985 TRAFFIC ASSIGNMENT TO THE RECOMMENDED PLAN AND THE FINANCIALLY ATTAINABLE PROGRAM

As discussed earlier under the alternate plan treatments, the 1985 projected total trip table was assigned to both the Recommended Plan (Alternate 4) and the Financially Attainable Program. Four iterations of capacity restraint were run on each plan. The assigned volumes are the sum of one-fourth of each of four capacity restraint assignments on each link. The use of average assigned volumes from four computer iterations was desirable due to the close proximity of the major streets in a major portion of the study area and due to the fact that on links not involved in the closely spaced major streets the average volumes generally closely approximated the volumes from all iterations. The resulting volumes are indicated on Plate IV-7 for the Recommended Plan and on Plate IV-8 for the Financially Attainable Program. The volumes are shown for each major segment of the network and represent the 1985 two-way average daily traffic volumes. Also indicated are two-way turning movements at interchange locations.

SUMMARY OF USAGE

A total of 1,784,000 vehicle miles of daily travel is anticipated on the designated streets in the Recommended Transportation Plan. This figure excludes travel on local streets. A total of 686,000 vehicle miles will occur on expressways and freeways and comprise 39 percent of the total daily vehicle miles. As shown in Table IV-5, 1985 Traffic on the Recommended Plan and Financially Attainable Program, arterial and collector travel amounts to 1,098,000 vehicle miles and constitutes the remaining 61 percent of the total vehicle miles. Table IV-5 presents similar data for the Financially Attainable Program, also.

There will be a total of about 64,501 daily vehicle hours of travel on the Recommended Plan. Of this, 13,547 hours, or 21 percent, will occur on the freeways and expressways. The remaining 50,954 vehicle hours, or 79 percent of the total, will occur on the arterials and collectors. Speed on the freeways and expressways will average 51 miles per hour while the speed on arterials and collectors will average 22 miles per hour. Similar data for the Financially Attainable Program are presented in Table IV-5.

Although expressways and freeways form only 11 percent of the Recommended Plan thoroughfare mileage and constitute 39 percent of the total vehicle miles, they account for 21 percent of the total vehicle hours.

COST ESTIMATES

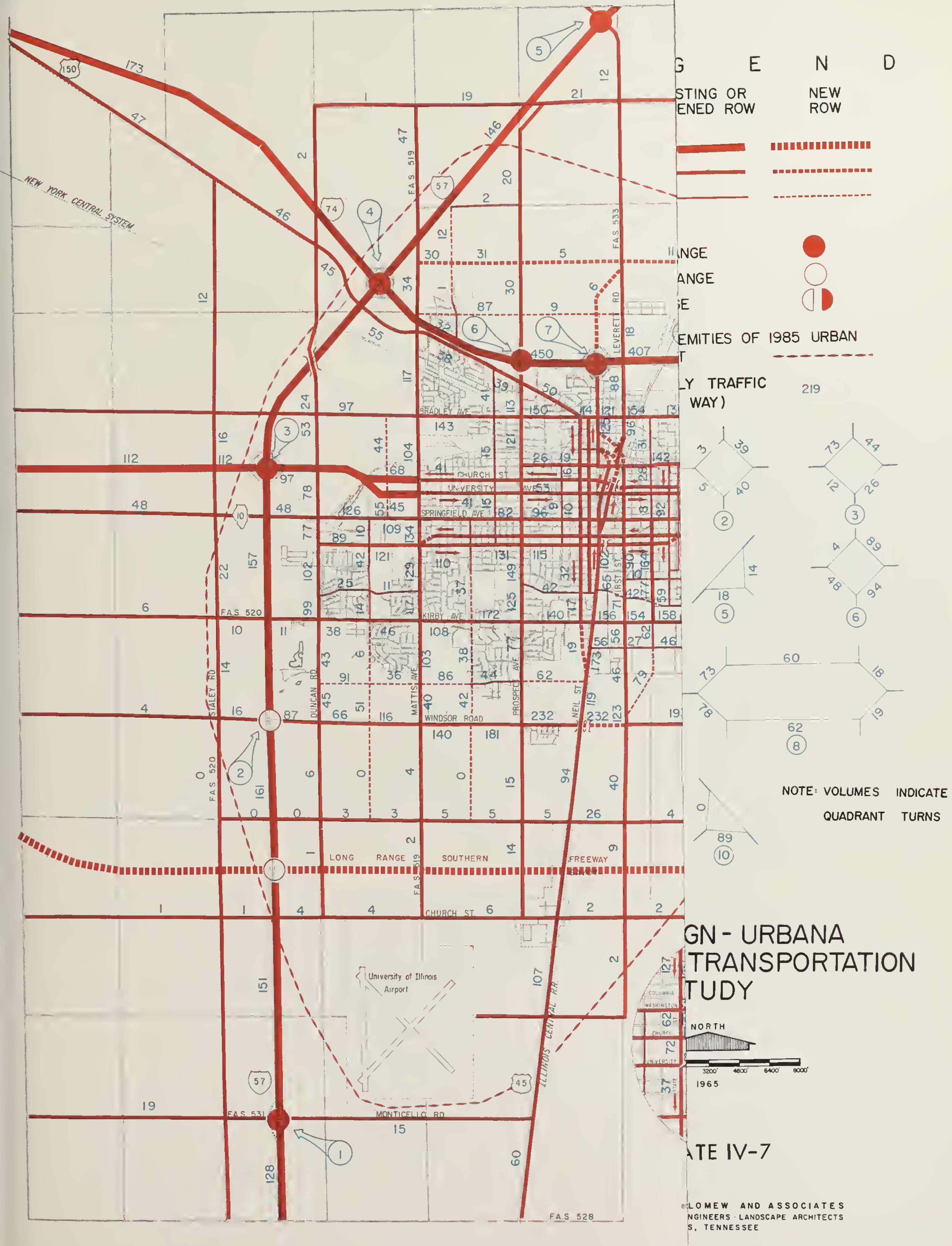
The cost of developing the transportation plans involves three elements--roadway cost, major structures, and right-of-way costs. Unit costs were based on 1965 construction costs for streets in urban areas, as provided by the Illinois Division of Highways. However, some costs were modified to reflect location of job site and complexity of construction in urban areas.

The cost estimates were assembled in two levels of detail:

1. The cost of the improvements in the five-year improvement program (1970-1975) was determined within narrow ranges by estimating quantities

1985 TRAFFIC ON RECOMMENDED PLAN

AVERAGE DAILY VOLUMES (TWO WAY)



NOTE: VOLUMES INDICATE QUADRANT TURNS

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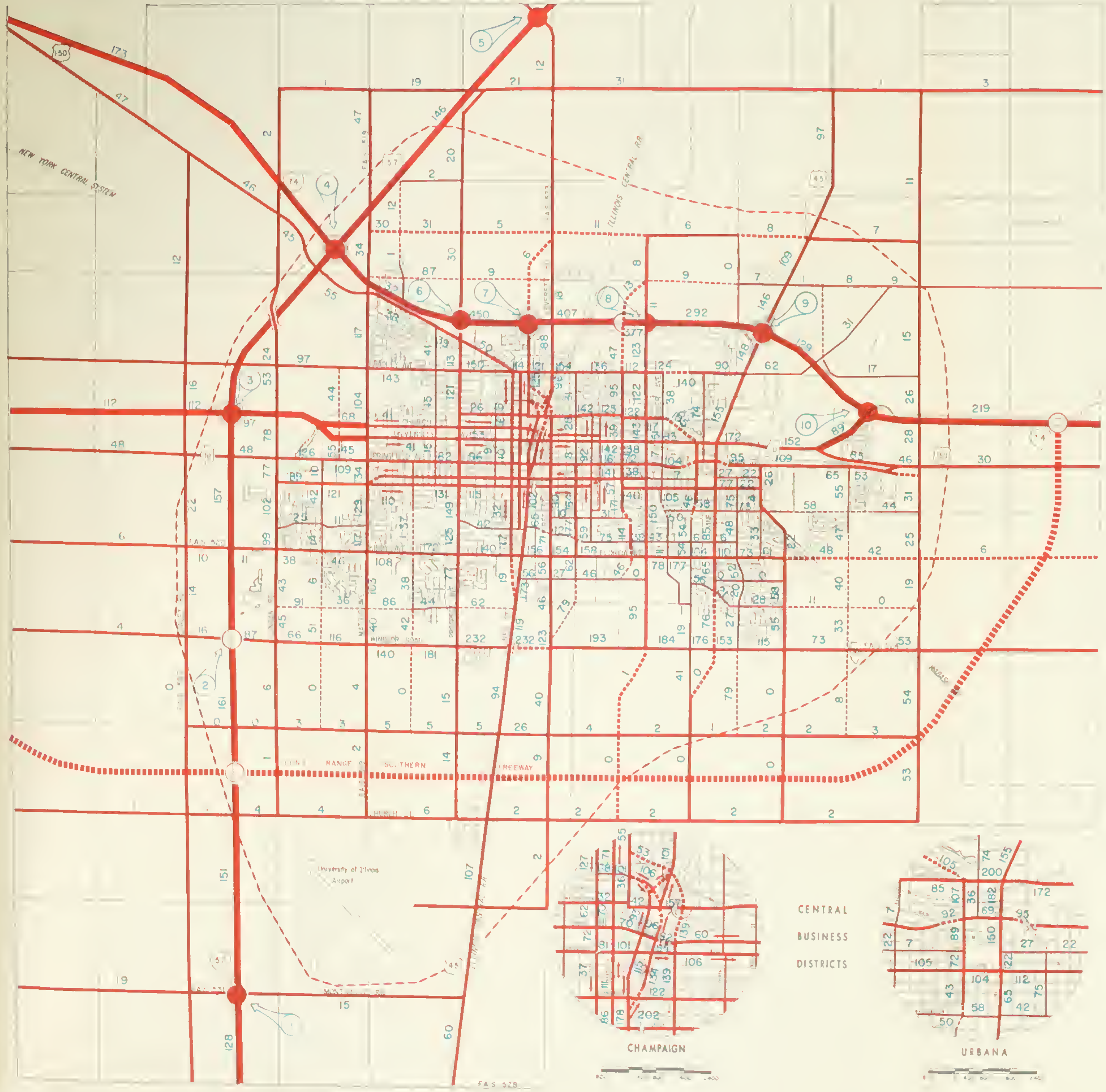
1985 TRAFFIC ON RECOMMENDED PLAN

AVERAGE DAILY VOLUMES (TWO WAY)



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COLLECTOR	―	┄

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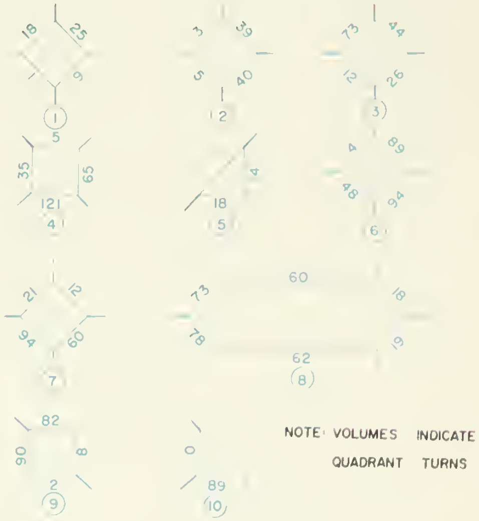
PROPOSED INTERCHANGE ○

SPLIT INTERCHANGE ◐

FORECASTED EXTREMITIES OF 1985 URBAN LAND DEVELOPMENT - - - -

1985 AVERAGE DAILY TRAFFIC IN HUNDREDS (TWO WAY) 219



NOTE: VOLUMES INDICATE QUADRANT TURNS

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PLATE IV-7

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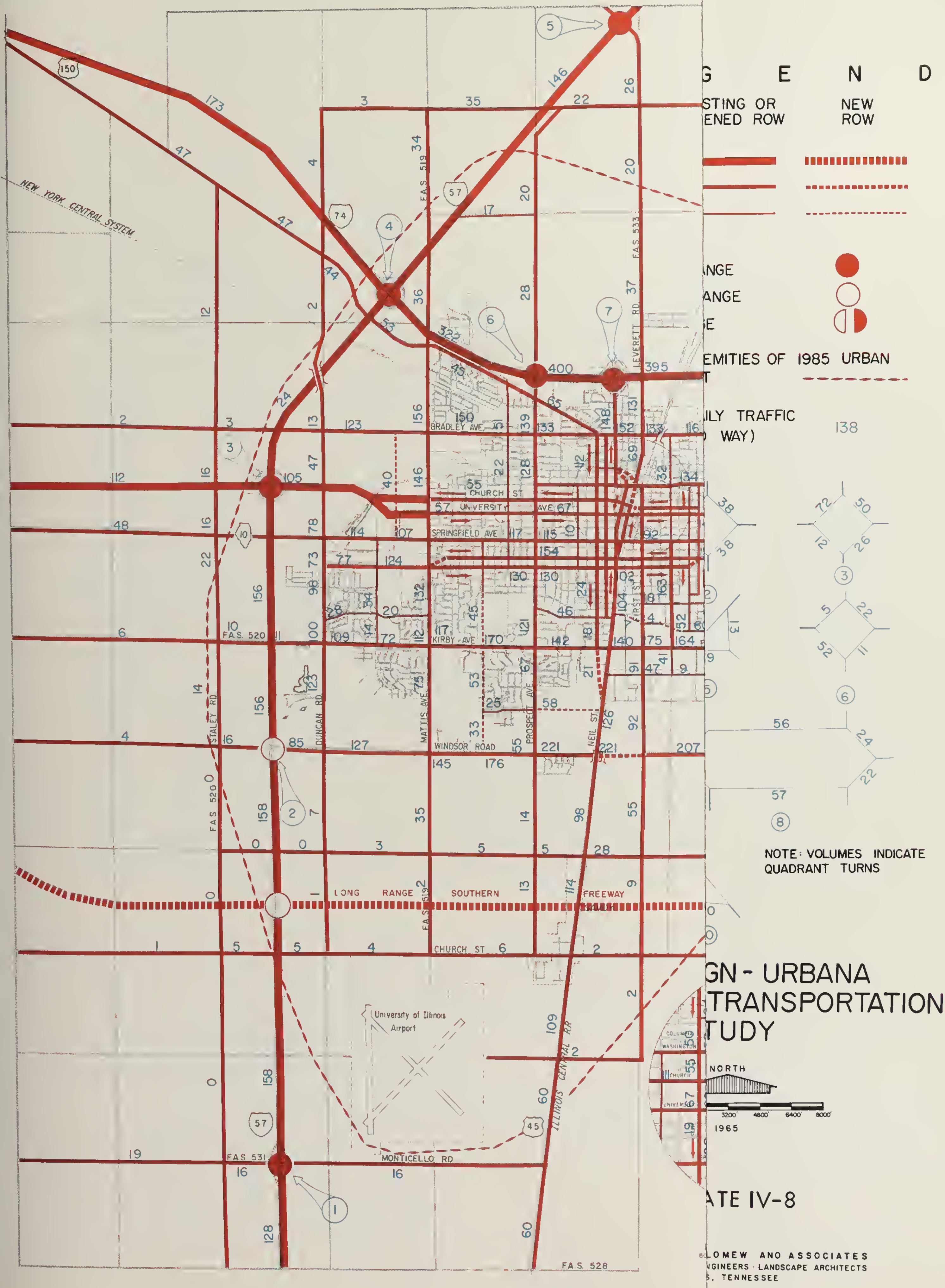
MEMPHIS, TENNESSEE

1985 TRAFFIC ON FINANCIALLY ATTAINABLE

AVERAGE DAILY VOLUMES (TWO WAY)



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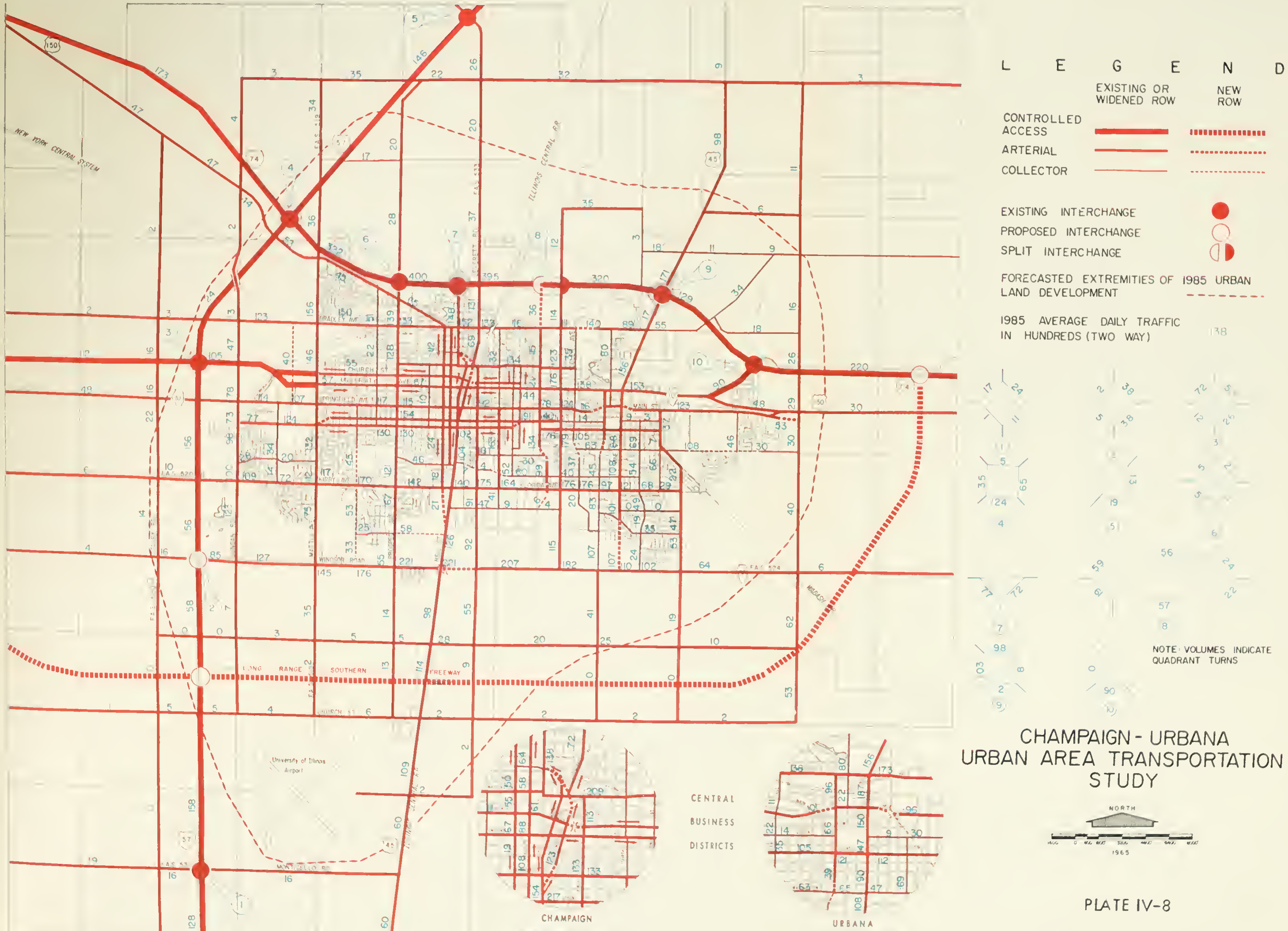
1985 TRAFFIC ON FINANCIALLY ATTAINABLE PROGRAM

AVERAGE DAILY VOLUMES (TWO WAY)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EXISTING OR WIDENED ROW
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SPLIT INTERCHANGE
FORECASTED EXTREMITIES OF 1985 URBAN LAND DEVELOPMENT
1985 AVERAGE DAILY TRAFFIC IN HUNDREDS (TWO WAY)
138
NOTE: VOLUMES INDICATE QUADRANT TURNS
NEW YORK CENTRAL SYSTEM
ILLINOIS CENTRAL RR
LONG RANGE SOUTHERN FREEWAY
WABASH
University of Illinois Airport
CENTRAL BUSINESS DISTRICTS
CHAMPAIGN
URBANA
NORTH
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CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION
STUDY

PLATE IV-8

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TABLE IV-4

SYSTEM MILEAGE--RECOMMENDED PLAN AND FINANCIALLY ATTAINABLE PROGRAM

Champaign-Urbana Urban Area Transportation Study

FACILITY TYPE	NEW RIGHT-OF-WAY Recommended Plan	NEW RIGHT-OF-WAY Financially Attainable Program	EXISTING OR WIDENED RIGHT-OF-WAY Recommended Plan	EXISTING OR WIDENED RIGHT-OF-WAY Financially Attainable Program	TOTAL Recommended Plan	TOTAL Financially Attainable Program	PERCENT OF TOTAL Recommended Plan	PERCENT OF TOTAL Financially Attainable Program
Freeway-Expressway	--	--	32	32	32	32	11	12
Arterial Street and Highway	16	4	185	185	201	189	70	72
Collector Street and Highway	19	5	36	36	55	41	19	16
TOTAL	35	9	253	253	288	262	100	100

TABLE IV-5

1985 TRAFFIC ON THE RECOMMENDED PLAN AND FINANCIALLY ATTAINABLE PROGRAM

Champaign-Urbana Urban Area Transportation Study

FACILITY TYPE	VEHICLE MILES TOTAL Recommended Plan	VEHICLE MILES TOTAL Financially Attainable Program	VEHICLE MILES PERCENT Recommended Plan	VEHICLE MILES PERCENT Financially Attainable Program	VEHICLE HOURS TOTAL Recommended Plan	VEHICLE HOURS TOTAL Financially Attainable Program	VEHICLE HOURS PERCENT Recommended Plan	VEHICLE HOURS PERCENT Financially Attainable Program	AVERAGE SPEED MILES PER HOUR Recommended Plan	AVERAGE SPEED MILES PER HOUR Financially Attainable Program
Freeway-Expressway	686,000	687,000	39	38	13,547	13,608	21	20	51	50
Arterial-Collector	1,098,000	1,108,000	61	62	50,954	54,012	79	80	22	21
TOTAL	1,784,000	1,795,000	100	100	64,501	67,620	100	100	28	27

and parcel-by-parcel appraisal. Much of this work has been done by the participating agencies.

2. The cost of the improvements in the next ten-year program was approximated by means of unit prices on a per mile basis of a typical cross section. Other facilities, such as interchanges, intersectional improvements, special structures, lighting and such items were estimated in terms of cost per facility.

The general cost estimates do not necessarily represent the exact cost of any single improvement. Construction contract size, prevailing prices of labor and materials, location of job site in the study area, prevailing topography, and other factors influence the total roadway cost. However, these general unit costs provide a basis for determining the relative expenditures anticipated to construct the various components of the recommended transportation plan. Table IV-6 summarizes the unit costs used for the cost estimates of the 1985 transportation plans. Based on available data, the right-of-way cost was found to be 37 percent of the construction cost.

Comparison of the 1985 average daily assigned volume with the capacity of the street section under consideration determined the level of improvement. Determination of the precise dimensions for a specific transportation facility is a function of preliminary engineering and design. However, all new facilities or widening improvements must be constructed to desirable roadway geometrics and adequate design standards. Roadway standards for a specific improvement must be based upon a number of considerations including level of service, safety, geometric criteria, and capacity requirements. The roadway cross sections recommended for use in the Champaign-Urbana area were developed by the Illinois Division of Highways and are presented in Plate IV-9.

The cost estimate for each section of the Financially Attainable Program is given in Table IV-7 and is broken down into roadway costs, right-of-way costs, and major structure costs. Included in Table IV-7 are the following items:

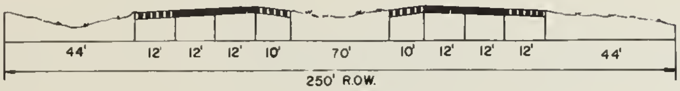
1. Roadway section description and termini
2. Length of section in feet
3. Existing right-of-way and pavement widths
4. Proposed cross section and proposed right-of-way and pavement widths
5. Estimated cost broken down into right-of-way cost, roadway cost, and major structure cost

RECOMMENDED TYPICAL CROSS SECTIONS

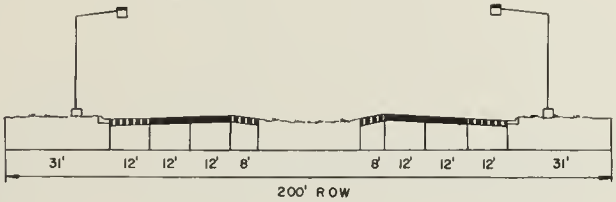
CHAMPAIGN-URBANA URBAN AREA TRANSPORTATION STUDY

CONTROLLED ACCESS FACILITIES

A-1 FOUR LANE RURAL FREEWAY

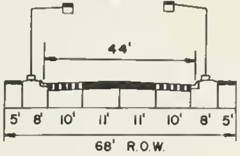


EX-2 FOUR LANE URBAN EXPRESSWAY



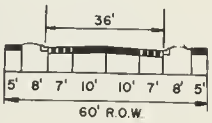
MAJOR STREET (ONE-WAY)

OS-32 TWO LANES PLUS PARKING BOTH SIDES

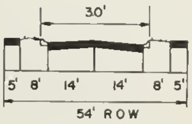


COLLECTOR STREET

C-1 TWO LANES PLUS PARKING BOTH SIDES

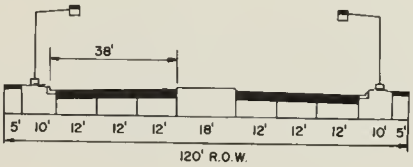


C-2 TWO LANES

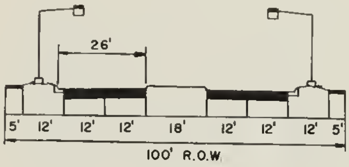


MAJOR STREET (TWO-WAY)

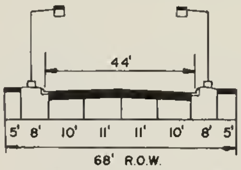
TS-10 SIX LANES



TS-30 FOUR LANES

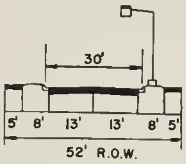


TS-50M FOUR LANES (NO MEDIAN)



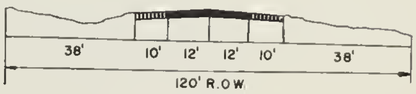
DEVELOPMENT WITH NO MEDIAN

TS-50 TWO LANES



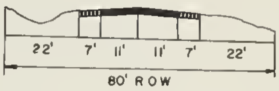
MAJOR HIGHWAY

C



COLLECTOR HIGHWAY

D



NOTE: THE RECOMMENDED TYPICAL CROSS SECTIONS WERE ADOPTED IN 1965 FOR PLANNING PURPOSES AND MAY NOT NECESSARILY BE USED IN ACTUAL CONSTRUCTION DUE TO DESIRES FOR HIGHER STANDARDS IN ACCORDANCE WITH SAFETY CONSIDERATIONS AND OTHER FACTORS.

HARLAND BARTHOLOMEW AND ASSOCIATES
PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE, URBAN RENEWAL
MEMPHIS, TENNESSEE

PLATE IV-9

TABLE IV-6

CROSS SECTION DEVELOPMENT UNIT COSTS

Champaign-Urbana Urban Area Transportation Study

Reference Number	New/ Widen	Pavement Width	Shoulder Or Median Width	Grade And Drain	Base, Surface, Etc.	Sidewalks or Shoulder	Traffic Control And Roadside Development	Illumination	Total Cost*/ Mile
TS-30	New	2 @ 26	18'	79,100	423,800	35,900	7,200	44,000	590,000
	Widen	2 @ 26	18'	65,800	188,100	35,900	7,200	58,000	355,000**
TS-50M	New	44	--	68,600	259,500	35,900	5,500	43,000	412,500
	Widen	44	--	62,200	95,500	35,900	5,500	43,000	242,100**
TS-50	New	30	--	64,100	187,100	35,900	5,500	43,000	335,600
	Widen	30	--	62,200	77,300	35,900	5,500	43,000	223,900**
OS-32	New	44	--	69,400	275,400	35,900	5,500	43,000	429,200
	Widen	44	--	62,200	96,500	35,900	5,500	43,000	250,200**
OS-32	New	30	--	69,400	187,100	35,900	5,500	43,000	340,900
	Widen	30	--	62,200	77,300	35,900	5,500	43,000	223,900**
TS-10	New	2 @ 38	18'	88,100	568,800	35,900	7,200	65,000	765,000
	Widen	2 @ 38	18'	65,800	244,100	35,900	7,200	65,000	418,000**
C-3	New	26	--	63,100	166,500	35,900	5,500	43,000	314,000
	Widen	26	--	62,200	72,900	35,900	5,500	43,000	219,500**
D	New	22	7'	42,500	79,600	1,770	5,700	--	129,670
	Widen	22	7'	22,000	21,600	1,770	5,700	--	51,170**
C	New	24	10'	62,400	127,200	35,900	9,000	--	238,100
	Widen	24	10'	32,300	23,400	35,900	9,000	--	104,200**

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*Includes cost of engineering, excludes right-of-way cost.

**Plus $4,500/foot of widening/mile.

NOTE: All widenings include resurfacing. All cost figures are in 1965 dollars.

6. Recommended construction priority rating

7. Estimated 1985 average daily traffic

8. Jurisdiction responsible for the execution of the improvement

9. Remarks column

The recommended pavement widths where construction is proposed are those necessary to accommodate the expected 1985 traffic demand. The proposed right-of-way widths are those necessary to provide for the improvement with minimum consideration for long-range expansion. This was necessary in order to achieve financial attainability in the area. In some cases, the existing substandard right-of-way widths were maintained because the intensity of development prohibited feasible acquisition of the minimum desirable right-of-way widths.

The total cost for developing the Recommended Transportation Plan is as shown in Table IV-8 (Cost Summary--Recommended Plan and Financially Attainable Program). Of the total development cost, roadway cost represents 64 percent, major structures about 13 percent, and the remaining 23 percent involve the purchase of right-of-way for either pavement widening improvements or facilities on new locations. The costs are all based on 1965 unit price data and the 1965 dollar. The cost estimate in Table IV-8 includes consideration of stage construction.

Freeways and expressways development costs amount to $1,195,000 and comprise 3 percent of the total cost for new and improved facilities. This cost covers the construction of an interchange at I-57 and Windsor Road and another interchange at I-74 and Goodwin Avenue. Improvements and additions to the major and collector street and highway system will necessitate an outlay of $33,282,000, or 97 percent of the total recommended plan development cost.

Table IV-8 presents similar cost summary data for the Financially Attainable Program. The cost figures in Table IV-8 do not include the cost of committed projects.

Cost estimates are dependent upon a number of items to a controlling degree. Changes in design standards as well as unit prices cause the costs to change. For the purposes of this long-range planning study, highly refined cost estimates are not warranted; however, it is desirable to have reasonably accurate indications of the cost of plan elements in order to provide guidance for local, state, and federal agencies in the implementation of the improvements.

F

Project Number	Street and Section		Existing Pavement	Existing R.O.W.1	1985 ADT2	Sectio Referen	Remarks
1	Bradley Avenue						
	Duncan Road	Country Fair Road	18	65	12,300	TS-30	allow for left turns.
	Country Fair Road	Mattis Avenue	18-24	80	12,300	TS-30	
	Mattis Avenue	City Limit	25	66	15,000	TS-50	$278,000 of the cost and Champaign City
	City Limit	McKinley Avenue	25	66	15,000	TS-50	aining $277,000.
	McKinley Avenue	Prospect Avenue	40	66	15,000	TS-50	
	City Limit	Goodwin Avenue	27	50	11,600	TS-50	
	Goodwin Avenue	Lincoln Avenue	20	40	11,800	TS-50	
	Lincoln Avenue	Coler Avenue	20	66	11,100	TS-50	will be purchased in the first 5-year
	Lincoln Avenue	Coler Avenue	20	66	11,100	TS-50	way construction will be completed
	Coler Avenue	A point	New	New	14,000	TS-50	priority.
	Coler Avenue	A point	New	New	14,000	TS-50	
	A point	Broadway Avenue	18	60	14,000	TS-50	
	A point	Broadway Avenue	18	60	14,000	TS-50	
	Broadway Avenue	Willow Road	16	55	8,900	TS-50	
	Willow Road	U. S. 45	18	55	8,900	TS-50	
2	Washington Street						
	Walnut Street	Chestnut Street	46	70	13,100	TS-50	nprovements in connection with
3	Main Street to Park Avenue Connection						
	Main Street	Park Avenue	New	New	9,200	OS-3	structure and pavement required.
4	Springfield Avenue						
	Study Area Boundary	Staley Road	18	66	4,800	C	f this facility is warranted because
	Staley Road	Duncan Road	18	66	4,700	C	umes on Springfield Avenue would
	Duncan Road	Holiday Park Drive	18	66	11,400	TS-50	signed volume and the existing capacity
	Holiday Park Drive	Mattis Avenue	19	66	10,700	TS-50	e 72 is completed
	Russell Street	McKinley Avenue	28	66	10,200	TS-50	000 for intersection widening.
	Prospect Avenue	Elm Street	34	66	13,600	TS-50	
	Elm Street	First Street	34	66	14,000	TS-50	
	First Street	Fourth Street	34	58	9,200	TS-50	000 for intersection widening.
	Fourth Street	Sixth Street	34	58	6,400	TS-50	
	Coler Avenue	Broadway Avenue	20-36	66	11,400	TS-50	ht-of-way is owned by Urbana.
5	Illinois Street						
	Lincoln Avenue	Coler Avenue	28	66	17,600	TS-30	
	Coler Avenue	Race Street	28	66	10,500	TS-	
	Vine Street	Cottage Grove Avenue	25	60	11,200	TS-50	
6	Washington Street-Urbana						
	Philo Road	Dodson Drive	18	80	10,800	TS-50	he existing 60' right-of-way is adjacent to
							rk properties on the north side of West
7	Peabody Drive						
	First Street	Fourth Street	35	66	4,200	OS-3	ost includes widening and lighting as
	Fourth Street	Sixth Street	35	66	2,500	OS-3	. I. Forms one leg of a future one-
							lanned by U.I.
8	Pennsylvania Avenue						
	Fourth Street	Sixth Street	37	66	2,500	OS-3	ost includes widening and lighting as
	Sixth Street	Goodwin Avenue	37	66	7,500	OS-3	e U.I. Forms one leg of a future one-
							lanned by the U.I.
9	Kirby Avenue						
	Duncan Road	City Limit	18	66	10,900	TS-3	he recommended section of 2@22'
	City Limit	Scottsdale Drive	26	66	10,900	TS-3	n was the latest provided by the City
	Scottsdale Drive	Holiday Park Drive	26	60	10,900	TS-3	.
	Holiday Park Drive	Mattis Avenue	44	66	7,200	TS-5	
10	Florida Avenue						
	Lincoln Avenue	Coler Avenue	28	60	17,600	TS-3	
	Coler Avenue	Race Street	28	60	17,000	TS-3	
	Race Street	Vine Street	29	60	9,700	TS-3	t $42,000 for widening of Florida
							Street.
11	Devonshire Drive						
	Prospect Avenue	Neil Street	New	New	5,800	C-1	of this facility should be concurrent
							elopment.

TABLE IV-7

MAJOR STREET COST ESTIMATE FINANCIALLY ATTAINABLE PROGRAM

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

Project Number	Street and Section		Existing		1985 ADT[2]	Recommended			Length In Feet	Estimated Cost in Thousands of Dollars				Priority[4]	Jurisdiction	Remarks
			Pavement	R.O.W.[1]		Section Reference[3]	Pavement	R.O.W.[1]		Roadway	R.O.W.	Structure	Total			
1	Bradley Avenue															
	Duncan Road	Country Fair Road	18	65	12,300	TS-30	2@26	100	3,680	340	13	--	353	1	County	18' median to allow for left turns.
	Country Fair Road	Mattis Avenue	18-24	80	12,300	TS-30	2@26	100	1,520	131	3	--	134	1	County	
	Mattis Avenue	City Limit	25	66	15,000	TS-50M	44	80	2,170	135	75	--	210	1	County-Champaign	County bears $278,000 of the cost and Champaign City bears the remaining $277,000.
	City Limit	McKinley Avenue	25	66	15,000	TS-50M	44	80	1,750	119	112	--	231	1	County-Champaign	
	McKinley Avenue	Prospect Avenue	40	66	15,000	TS-50M	44	80	1,335	38	76	--	114	1	County-Champaign	
	City Limit	Goodwin Avenue	27	50	11,600	TS-50M	44	80	1,160	91	34	--	125	2	Urbana	
	Goodwin Avenue	Lincoln Avenue	20	40	11,800	TS-50M	44	80	1,320	103	38	--	141	2	Urbana	
	Lincoln Avenue	Coler Avenue	20	66	11,100	TS-50M	44	80	1,000	--	70	--	70	1	Urbana	Right-of-way will be purchased in the first 5-year period. Roadway construction will be completed in the second priority.
	Lincoln Avenue	Coler Avenue	20	66	11,100	TS-50M	44	80	1,000	65	--	--	65	2	Urbana	
	Coler Avenue	A point	New	New	14,000	TS-50M	44	80	1,400	--	80	--	80	1	Urbana	
	Coler Avenue	A point	New	New	14,000	TS-50M	44	80	1,400	110	--	--	110	2	Urbana	
	A point	Broadway Avenue	18	60	14,000	TS-50M	44	80	930	--	37	--	37	1	Urbana	
	A point	Broadway Avenue	18	60	14,000	TS-50M	44	80	930	60	--	--	60	2	Urbana	
	Broadway Avenue	Willow Road	16	55	8,900	TS-50M	44	80	1,900	148	54	--	202	2	Urbana	
	Willow Road	U. S. 45	18	55	8,900	TS-50M	44	80	320	25	9	--	34	2	Urbana	
								TOTAL					1,966			
2	Washington Street															
	Walnut Street	Chestnut Street	46	70	13,100	TS-50	46	70	250				140	1	Champaign	Intersection improvements in connection with the CBD plan.
								TOTAL	250				140			
3	Main Street to Park Avenue Connection															
	Main Street	Park Avenue	New	New	9,200	OS-30	44	68	640			850	850	2	Champaign	New railroad structure and pavement required.
								TOTAL	640				850			
4	Springfield Avenue															
	Study Area Boundary	Staley Road	18	66	4,800	C	24	120	10,560	262	52	--	314	2	State	Construction of this facility is warranted because the traffic volumes on Springfield Avenue would exceed the assigned volume and the existing capacity until Interstate 72 is completed
	Staley Road	Duncan Road	18	66	4,700	C	24	120	5,280	131	26	--	157	2	State	
	Duncan Road	Holiday Park Drive	18	66	11,400	TS-50M	44	66	2,640	178	--	--	178	2	State	
	Holiday Park Drive	Mattis Avenue	19	66	10,700	TS-50M	44	66	2,640	178	--	--	178	2	State	
	Russell Street	McKinley Avenue	28	66	10,200	TS-50M	44	66	1,250	66	--	--	136	1	State	Includes $70,000 for intersection widening.
	Prospect Avenue	Elm Street	34	66	13,600	TS-50M	44	66	2,150	102	--	--	102	1	State	
	Elm Street	First Street	34	66	14,000	TS-50M	44	66	3,120	154	--	--	154	1	State	
	First Street	Fourth Street	34	58	9,200	TS-50M	44	66	1,500	73	48	--	191	1	State	Includes $70,000 for intersection widening.
	Fourth Street	Sixth Street	34	58	6,400	TS-50M	44	66	850	43	26	--	69	1	State	
	Coler Avenue	Broadway Avenue	20-36	66	11,400	TS-50M	44	66	1,850	125	--	--	125	2	Urbana	Part of the right-of-way is owned by Urbana.
								TOTAL					1,604			
5	Illinois Street															
	Lincoln Avenue	Coler Avenue	28	66	17,600	TS-30	2@26	88	900	53	36	--	89	2	Urbana	
	Coler Avenue	Race Street	28	66	10,500	TS-	2@26	88	2,060	121	81	--	202	2	Urbana	
	Vine Street	Cottage Grove Avenue	25	60	11,200	TS-50M	44	60	1,320	82	56	--	138	2	Urbana	
								TOTAL					429			
6	Washington Street-Urbana															
	Philo Road	Dodson Drive	18	80	10,800	TS-50M	44	80	4,550	273	43	--	316	1	Urbana	Committed. The existing 60' right-of-way is adjacent to school and park properties on the north side of West Dodson Drive.
								TOTAL					316			
7	Peabody Drive															
	First Street	Fourth Street	35	66	4,200	OS-32	55	80						1	University of Illinois	Committed. Cost includes widening and lighting as provided by U. I. Forms one leg of a future one-way couple planned by U.I.
	Fourth Street	Sixth Street	35	66	2,500	OS-32	55	80						1	University of Illinois	
								TOTAL					390			
8	Pennsylvania Avenue															
	Fourth Street	Sixth Street	37	66	2,500	OS-32	57	80						1	University of Illinois	Committed Cost includes widening and lighting as provided by the U.I. Forms one leg of a future one-way couple planned by the U.I.
	Sixth Street	Goodwin Avenue	37	66	7,500	OS-32	57	80						1	University of Illinois	
								TOTAL					424			
9	Kirby Avenue															
	Duncan Road	City Limit	18	66	10,900	TS-30	2@26	100	870	83	7	--	90	1	Champaign	Committed. The recommended section of 2@22' with 4' median was the latest provided by the City of Champaign.
	City Limit	Scottsdale Drive	26	66	10,900	TS-30	2@26	100	1,160	110	9	--	119	1	Champaign	
	Scottsdale Drive	Holiday Park Drive	26	60	10,900	TS-30	2@26	100	620	57	34	--	91	1	Champaign	
	Holiday Park Drive	Mattis Avenue	44	66	7,200	TS-50M	44	66	2,600	--	--	--	--	1	Champaign	
								TOTAL					300			
10	Florida Avenue															
	Lincoln Avenue	Coler Avenue	28	60	17,600	TS-30	2@26	94	1,320	120	90	--	210	1	Urbana	
	Coler Avenue	Race Street	28	60	17,000	TS-30	2@26	94	1,320	120	90	--	210	1	Urbana	
	Race Street	Vine Street	29	60	9,700	TS-30	2@26	94	1,400	127	250	--	377	1	Urbana	Includes about $42,000 for widening of Florida through Vine Street.
								TOTAL					797			
11	Devonshire Drive															
	Prospect Avenue	Neil Street	New	New	5,800	C-1	36	60	3,220	225	83	--	308	2	Champaign	Development of this facility should be concurrent with area development.
								TOTAL					308			

			Existing				Remarks
Project Number	Street and Section		Pavement	R.O.W.[1]	1985 ADT[2]	Sectio Referen	
12	Windsor Road						
	Staley Road	Interstate 57	16	50	1,600	TS-30	
	Interstate 57	Duncan Road	16	50	8,500	TS-30	
	Duncan Road	Holiday Park Drive	16	50	12,700	TS-30	
	Holiday Park Drive	Mattis Avenue	16	50	12,700	TS-30	
	Mattis Avenue	Russell Street	16	50	14,500	TS-30	
	Russell Street	Prospect Avenue	16	50	14,500	TS-10	
	Prospect Avenue	Neil Street	16	50	22,100*	TS-10	
	Prospect Avenue	Neil Street	16	50	22,100	TS-10	
	Neil Street	First Street	New	New	22,100*	TS-10	ll right-of-way width. Build half the
	Neil Street	First Street	New	New	22,100	TS-10	first 5-year program and build the
	First Street	Lincoln Avenue	16	50	20,700*	TS-10	he second priority. The 1985 average
	First Street	Lincoln Avenue	16	50	20,700	TS-10	s the same for both priorities 1 and 2.
	Lincoln Avenue	Race Street	16	66	18,200*	TS-10	ils regarding Windsor Road improve-
	Lincoln Avenue	Race Street	16	66	18,200	TS-10	e IV-21, item 6.
	Race Street	Vine Street	16	66	17,900*	TS-10	
	Race Street	Vine Street	16	66	17,900	TS-10	
	Vine Street	Anderson Street	16	66	11,000*	TS-30	
	Vine Street	Anderson Street	16	66	11,000	TS-30	
	Anderson Street	Philo Road	16	66	10,200*	TS-30	
	Anderson Street	Philo Road	16	66	10,200	TS-30	
							djustment.
13	Bloomington Road (U. S. 150)						
	Prospect Avenue	Bradley Avenue	18	60	6,500	C	
14	Staley Road						
	Bradley Avenue	Two Miles North	14	50	1,200	D	
							nterstate 57
15	Duncan Road						
	U.S. 150	Bradley Avenue	20	66	1,300	C	
	Bradley Avenue	Decatur Highway	20	66	4,700	TS-50	
	Decatur Highway	Springfield Avenue	20	66	7,800	TS-50	
	Springfield Avenue	John Street	20	66	7,300	TS-50	
	John Street	Sangamon Drive	20	66	9,800	TS-50	
	Sangamon Drive	Kirby Avenue	20	66	10,000	TS-50	
	Kirby Avenue	Windsor Road	20	66	12,300	TS-50	
16	Mattis Avenue						
	Kirby Avenue	Devonshire Drive	34	50	7,500	TS-50	
	Devonshire Drive	Windsor Road	16	66	4,900	TS-50	
							g streets from John Street to Devonshire
							investigated and reduced to about
17	Russell Street						
	Armory	Florida Avenue	New	New	4,500	C-2	
	Florida Avenue	Windsor Road	New	New	5,280	C-2	
							of intersection at Bloomington Road
18	Prospect Avenue						
	Interstate 74	Bloomington Road	54	66	17,600	TS-30	
	Bloomington Road	City Limit	44	300	13,900	TS-30	
	City Limit	Bradley Avenue	38	66	13,900	TS-30	
	Bradley Avenue	Washington Street	38	66	12,800	TS-30	
	Washington Street	Church Street	38	66	12,100	TS-30	
	Church Street	University Avenue	38	66	16,300	TS-30	
	University Avenue	Springfield Avenue	38	99	17,000	TS-30	idening.
	Springfield Avenue	Green Street	37	66	15,500	TS-50	o cost.
	Green Street	John Street	44	66	14,900	TS-50	
	John Street	City Limits	44	66	15,100	TS-50	
	City Limits	Devonshire Drive	31	66	6,700	TS-50	
	Devonshire Drive	Windsor Road	31	66	5,500	TS-50	
19	State Street						
	Kirby Avenue	Neil Street	New	New	2,100	TS-50	
							mprovement.
							mprovement.
20	Neil Street						
	Maple Street	Eureka Street	46	66	13,800	TS-30	mprovement.
	Green Street	John Street	40	60	14,300	TS-30	000 for intersection improvement.
	North of Birch Street	St. Mary's Road	40	68	12,500	TS-30	
	St. Mary's Road	Devonshire Drive	24	120	17,500	TS-30	
	Devonshire Drive	Windsor Road	24	120	12,600	TS-30	
	Windsor Road	AT&T Road	24	120	9,800	TS-30	
	AT&T Road	Church Street	24-31	96-120	11,400	TS-30	
	Church Street	Airport Drive	24-31	96-120	10,900	TS-30	
21	Walnut-Chestnut One-Way Couple						
	Neil Street	Neil Street	--	--	13,000	OS-3	

TABLE IV - 7 (CONTINUED)

Project Number	Street and Section		Existing		1985 ADT[2]	Recommended			Length In Feet	Estimated Cost in Thousands of Dollars				Priority[4]	Jurisdiction	Remarks
			Pavement	R.O.W.[1]		Section Reference[3]	Pavement	R.O.W.[1]		Roadway	R.O.W.	Structure	Total			
12	Windsor Road															
	Staley Road	Interstate 57	16	50	1,600	TS-30	16	118	2,640	--	17	--	17	2	County	
	Interstate 57	Duncan Road	16	50	8,500	TS-30	2@26	118	2,640	295	17	--	312	2	County	
	Duncan Road	Holiday Park Drive	16	50	12,700	TS-30	2@26	118	2,640	295	17	--	312	2	County	
	Holiday Park Drive	Mattis Avenue	16	50	12,700	TS-30	2@26	118	2,640	295	17	--	312	2	County	
	Mattis Avenue	Russell Street	16	50	14,500	TS-30	2@26	118	2,640	295	95	--	390	2	County	
	Russell Street	Prospect Avenue	16	50	14,500	TS-10	2@38	118	2,640	383	22	--	405	2	County	
	Prospect Avenue	Neil Street	16	50	22,100*	TS-10	38	118	3,150	230	326	--	556	1	County	Obtain the full right-of-way width. Build half the section in the first 5-year program and build the other half in the second priority. The 1985 average daily traffic is the same for both priorities 1 and 2. For more details regarding Windsor Road improvement, see page IV-21, item 6.
	Prospect Avenue	Neil Street	16	50	22,100	TS-10	2@38	118	3,150	230	--	--	230	2	County	
	Neil Street	First Street	New	New	22,100*	TS-10	38	118	2,400	172	34	275	481	1	University of Illinois	
	Neil Street	First Street	New	New	22,100	TS-10	2@38	118	2,400	172	--	--	172	2	University of Illinois	
	First Street	Lincoln Avenue	16	50	20,700*	TS-10	38	118	5,500	400	30	--	430	1	University of Illinois	
	First Street	Lincoln Avenue	16	50	20,700	TS-10	2@38	118	5,500	400	--	--	400	2	University of Illinois	
	Lincoln Avenue	Race Street	16	66	18,200*	TS-10	38	118	2,640	193	17	--	210	1	Urbana	
	Lincoln Avenue	Race Street	16	66	18,200	TS-10	2@38	118	2,640	193	--	--	193	2	Urbana	
	Race Street	Vine Street	16	66	17,900*	TS-10	38	118	1,440	105	10	--	115	1	Urbana	
	Race Street	Vine Street	16	66	17,900	TS-10	2@38	118	1,440	102	--	--	102	2	Urbana	
	Vine Street	Anderson Street	16	66	11,000*	TS-30	26	118	1,200	75	8	--	83	1	Urbana	
	Vine Street	Anderson Street	16	66	11,000	TS-30	2@26	118	1,200	73	--	--	73	2	Urbana	
	Anderson Street	Philo Road	16	66	10,200*	TS-30	26	118	2,640	150	17	--	167			
	Anderson Street	Philo Road	16	66	10,200	TS-30	2@26	118	2,640	145	--	--	145			
								TOTAL					5,105			
13	Bloomington Road (U. S. 150)															
	Prospect Avenue	Bradley Avenue	18	60	6,500	C	18	60	3,500				70	1	State	Intersection Adjustment.
								TOTAL					70			
14	Staley Road															
	Bradley Avenue	Two Miles North	14	50	1,200	D	22	120	10,560	300	50	--	350	2	County	
								TOTAL					350			
15	Duncan Road															
	U.S. 150	Bradley Avenue	20	66	1,300	C	20	66	5,280	--	--	187	187	2	County	Structure at Interstate 57
	Bradley Avenue	Decatur Highway	20	66	4,700	TS-50	30	66	2,850	133	--	--	133	2	County	
	Decatur Highway	Springfield Avenue	20	66	7,800	TS-50	30	66	2,430	116	--	--	116	2	County	
	Springfield Avenue	John Street	20	66	7,300	TS-50	30	66	1,320	63	--	--	63	2	Champaign	
	John Street	Sangamon Drive	20	66	9,800	TS-50M	44	66	2,640	206	--	--	206	2	Champaign	
	Sangamon Drive	Kirby Avenue	20	66	10,000	TS-50	30	66	1,320	63	--	--	63	2	Champaign	
	Kirby Avenue	Windsor Road	20	66	12,300	TS-50M	44	66	5,280	412	--	--	412	2	Champaign	
								TOTAL					1,180			
16	Mattis Avenue															
	Kirby Avenue	Devonshire Drive	34	50	7,500	TS-50	34	66	3,170	--	45	--	45	2	Champaign	
	Devonshire Drive	Windsor Road	16	66	4,900	TS-50	30	66	2,110	130	--	--	130	2	Champaign	
								TOTAL					175			
17	Russell Street															
	Armory	Florida Avenue	New	New	4,500	C-2	30	66	2,640	146	50	--	196	2	Champaign	Use of existing streets from John Street to Devonshire Drive may be investigated and reduced to about $266,000.
	Florida Avenue	Windsor Road	New	New	5,280	C-2	30	66	5,280	151	78	--	229	2	Champaign	
								TOTAL					425			
18	Prospect Avenue															
	Interstate 74	Bloomington Road	54	66	17,600	TS-30	54	66	1,480	--	--	--	70	1	State	Improvement of intersection at Bloomington Road
	Bloomington Road	City Limit	44	300	13,900	TS-30	2@26	88	500	34	31	--	65	1	State	
	City Limit	Bradley Avenue	38	66	13,900	TS-30	2@26	88	1,400	98	123	--	221	1	State	
	Bradley Avenue	Washington Street	38	66	12,800	TS-30	2@26	88	2,640	188	232	--	420	1	State	
	Washington Street	Church Street	38	66	12,100	TS-30	2@26	88	700	49	62	--	111	1	State	
	Church Street	University Avenue	38	66	16,300	TS-30	2@26	88	700	49	62	--	111	1	State	
	University Avenue	Springfield Avenue	38	99	17,000	TS-30	2@26	88	1,330	97	--	--	97	1	State	
	Springfield Avenue	Green Street	37	66	15,500	TS-50M	44	66	790	62	--	--	62	2	Champaign	
	Green Street	John Street	44	66	14,900	TS-50M	44	66	790	--	--	--	70	2	Champaign	Intersection widening.
	John Street	City Limits	44	66	15,100	TS-50M	44	66	6,000	--	--	--	--	-	Champaign	Committed--no cost.
	City Limits	Devonshire Drive	31	66	6,700	TS-50M	44	66	1,060	83	--	--	83	2	Champaign	
	Devonshire Drive	Windsor Road	31	66	5,500	TS-50M	44	66	2,320	182	--	--	182	2	Champaign	
								TOTAL					1,492			
19	State Street															
	Kirby Avenue	Neil Street	New	New	2,100	TS-50M	44	66	2,640	198	73	--	271	2	Champaign	
								TOTAL					271			
20	Neil Street															
	Maple Street	Eureka Street	46	66	13,800	TS-30	46	66	850	--	--	--	70	1	Champaign	Intersection Improvement.
	Green Street	John Street	40	60	14,300	TS-30	2@26	94	530	--	--	--	100	2	State	Intersection Improvement.
	North of Birch Street	St. Mary's Road	40	68	12,500	TS-30	2@26	68	630	--	--	--	70	2	State	Intersection Improvement.
	St. Mary's Road	Devonshire Drive	24	120	17,500	TS-30	2@26	120	1,740	181	--	--	251	2	State	Includes $70,000 for intersection improvement.
	Devonshire Drive	Windsor Road	24	120	12,600	TS-30	2@26	120	2,170	75	--	--	250	2	State	
	Windsor Road	AT&T Road	24	120	9,800	TS-30	2@26	120	5,280	238	--	175	238	2	State	
	AT&T Road	Church Street	24-31	96-120	11,400	TS-30	2@26	96-120	5,280	238	--	--	238	2	State	
	Church Street	Airport Drive	24-31	96-120	10,900	TS-30	2@26	96-120	5,280	238	--	--	238	2	State	
								TOTAL					1,455			
21	Walnut-Chestnut One-Way Couple															
	Neil Street	Neil Street	--	--	13,000	OS-32	44	68	--	383	1,362	--	1,745	1	Champaign	
								TOTAL					1,745			

Project Number	Street and Section		Existing		1985 ADT[2]	Secti Refere	Remarks
			Pavement	R.O.W.[1]			
22	Leverett Road						
	North of Roper Street	County Highway 2	18	60	10,700	TS-5	
23	First Street						
	Windsor Road	2,500' North of Windsor	20	66	9,200	TS-5	Illinois bears $99,000 of the cost, and the remaining $99,000.
24	Goodwin Avenue						
	Interstate 74	Bradley Avenue	New	New	3,600	TS-5	
	Bradley Avenue	Washington Street	24	66	9,200	TS-5	
	University Avenue	Springfield Avenue	27-36	66	7,800	TS-5	
	Nevada Street	Pennsylvania Avenue	New	New	13,400	TS-5	
25	Broadway Avenue						
	Country Club Road	University Avenue	18-32	60-82	8,000	C-2	
26	Vine Street						
	Main Street	Water Street	40	56	18,000	TS-3	
27	Water Street						
	Main Street	Broadway Avenue	New	New	4,700	TS-5	ilroad grade separation.
28	Main Street						
	Cottage Grove Ave.	City Limit	37	67	12,300	TS-3	The City of Urbana bears $113,000 of
	City Limit	3960' to the West	37	67	12,300	TS-3	ampaign County bears $187,000 and g $74,000 to be paid by abutting ers.
	State Highway 130						
	South of Wabash Railroad	U. S. 150	20	66	6,000	C	
	U. S. 150	Interstate 74 Spur	20	66	4,800	C	

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[1] R.O.W. indicates right-of-way width in feet.

[2] 1985 ADT refers to the 1985 average 24-hour traffic volume assigned to the financially attainable program.

[3] Section reference refers to a typical cross section. See Plate IV-9.

[4] Priority refers to the time of execution of an improvement, where priority 1 refers to 1970-1975 time period and priority 2 refers to the 1976-1985 time period.

Note: See Plate V-1 for project identification.

TABLE IV-7 (CONTINUED)

Project Number	Street and Section		Existing		1985 ADT[2]	Recommended			Length In Feet	Estimated Cost in Thousands of Dollars				Priority[4]	Jurisdiction	Remarks
			Pavement	R.O.W.[1]		Section Reference[3]	Pavement	R.O.W.[1]		Roadway	R.O.W.	Structure	Total			
22	Leverett Road															
	North of Roper Street	County Highway 2	18	60	10,700	TS-50	30	60	2,320	96	36	--	132	2	Champaign	
								TOTAL					132			
23	First Street															
	Windsor Road	2,500' North of Windsor	20	66	9,200	TS-50M	44	80	2,500	70	128	--	198	1	University of Illinois-Urbana	University of Illinois bears $99,000 of the cost, and Urbana bears the remaining $99,000
								TOTAL					198			
24	Goodwin Avenue															
	Interstate 74	Bradley Avenue	New	New	3,600	TS-50M	44	80	3,960	310	112	--	422	2	Urbana	
	Bradley Avenue	Washington Street	24	66	9,200	TS-50M	44	66	2,640	163	--	--	163	2	Urbana	
	University Avenue	Springfield Avenue	27-36	66	7,800	TS-50M	44	66	1,350	85	--	--	85	2	Urbana	
	Nevada Street	Pennsylvania Avenue	New	New	13,400	TS-50M	44	80	950	74	28	--	102	2	University of Illinois	
								TOTAL					772			
25	Broadway Avenue															
	Country Club Road	University Avenue	18-32	60-82	8,000	C-2	30	60-82	3,900	288	--	--	288	2	Urbana	
								TOTAL					288			
26	Vine Street															
	Main Street	Water Street	40	56	18,000	TS-30	2@26	80	200	--	--	--	117	2	Urbana	4' median
								TOTAL					117			
27	Water Street															
	Main Street	Broadway Avenue	New	New	4,700	TS-50M	44	80	1,000	--	125	--	317	1	Urbana	Includes a railroad grade separation
								TOTAL					387			
28	Main Street															
	Cottage Grove Ave.	City Limit	37	67	12,300	TS-30	2@26	100	2,000	185	110	--	295	2	Urbana	Committed. The City of Urbana bears $113,000 of the cost. Champaign County bears $187,000 and the remaining $74,000 to be paid by abutting property owners.
	City Limit	3960' to the West	37	67	12,300	TS-30	2@26	100	3,960	318	56	--	374	1	Urbana-County	
								TOTAL					669			
	State Highway 130															
	South of Wabash Railroad	U. S. 150	20	66	6,000	C	24	120	11,550					1	State	Committed.
	U. S. 150	Interstate 74 Spur	20	66	4,800	C	24	120	6,080					1	State	Committed.
								TOTAL					1640			

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[1] R.O.W. indicates right-of-way width in feet.

[2] 1985 ADT refers to the 1985 average 24-hour traffic volume assigned to the financially attainable program.

[3] Section reference refers to a typical cross section. See Plate IV-9.

[4] Priority refers to the time of execution of an improvement, where priority 1 refers to 1970-1975 time period and priority 2 refers to the 1976-1985 time period.

Note: See Plate V-1 for project identification.

COST SUMMARY

FACILITY TYPE	RIGHT-OF-WAY Recommended Plan	RIGHT-OF-WAY Financially Attainable Program	C Recomm Pl	PERCENT OF TOTAL Recommended Plan	PERCENT OF TOTAL Financially Attainable Program
Freeway-Expressway	--	--	-	3	--
Arterial and Collector Street and Highway	$7,422,000	$5,553,000	$22,56	97	100
TOTAL	$7,422,000	$5,553,000	$22,56	100	100
Percent of Total	23	23	6		

TABLE IV-8

COST SUMMARY--RECOMMENDED PLAN AND FINANCIALLY ATTAINABLE PROGRAM

Champaign-Urbana Urban Area Transportation Study

	RIGHT-OF-WAY		CONSTRUCTION		STRUCTURE		TOTAL		PERCENT OF TOTAL	
FACILITY TYPE	Recommended Plan	Financially Attainable Program	Recommended Plan	Financially Attainable Program	Recommended Plan	Financially Attainable Program	Recommended Plan	Financially Attainable Program	Recommended Plan	Financially Attainable Program
Freeway-Expressway	--	--	--	--	$1,195,000	--	$ 1,195,000	--	3	--
Arterial and Collector Street and Highway	$7,422,000	$5,553,000	$22,568,000	$16,946,000	3,292,000	1,637,000	33,282,000	$24,136,000	97	100
TOTAL	$7,422,000	$5,553,000	$22,568,000	$16,946,000	$4,487,000	$1,637,000	$34,477,000	$24,062,000	100	100
Percent of Total	23	23	64	70	13	7	100	100		

CHAPTER V

IMPLEMENTATION

This chapter presents the short- and long-range street and highway systems and parking, the traffic engineering improvements, and the continuing planning process. The material contained in this chapter was summarized from the Five-Year Program Plans Report; Interim Report J, Terminal and Transfer Facilities Inventory and Forecast; Interim Report L, Traffic Engineering Improvements; and the Continuing Planning Process Report.

The 1985 Financially Attainable Program presented in Chapter IV is a program for implementation over a 15-year period (1970-1985). A priority program for implementation was established. This program will consist of two priority groupings as follows: Priority 1 covers the 5-year period from 1970 to 1975; and Priority 2 spans over the remaining 10 years, namely, 1976 to 1985.

Construction of new facilities and widening of existing routes facilitates primarily the movement of vehicles. The resulting street system may be adequate to accommodate the travel between the origin and destination but may quickly become congested if the motorist is required to circulate around the area of destination to find a place to park. The provision of adequate parking facilities is a necessary part of the overall transportation plan in the Champaign-Urbana area. This is relatively more important in this study due to the fact that the development of the transportation plan involved the removal of on-street parking on all major streets in the Champaign-Urbana area.

The development of the transportation plan involves constructing new facilities and widening existing routes. However, before expending funds for new construction or widening, traffic operations techniques should be employed to utilize capacities of existing facilities to the maximum. Physical and operational improvements are needed to provide relief in heavily congested areas of traffic flow.

Traffic engineering improvements, the construction of new routes, and widening of existing facilities are the tools of implementing the recommendations contained in this report. The implementation of the recommended improvements will affect the actual distribution of land uses, and a reevaluation of the land use forecast will become desirable. This reevaluation involves a "feedback" analysis just as a reevaluation of the transportation plan is required as changes in the land use plan occur. Obviously, this is a repetitive process; and, due to this "feedback" relationship, a continuing planning program is required to maintain an up-to-date transportation plan. The collection of some of the inventory data for the Champaign-Urbana area was started in 1965. Five years have already elapsed, thus necessitating that the state and local agencies, as required, immediately embark on a quinquennial-type update of data and reanalysis and extension of the long-range transportation plan to meet the study area needs by 1990 to 1995.

SHORT- AND LONG-RANGE STREET AND HIGHWAY SYSTEMS AND PARKING

The cost of the financially attainable program, $32,656,000, is substantial and cannot be met overnight. A realistic stage development program based on the traffic service needs, benefits to be derived, and the availability of funds is the only logical way of implementing the plan. The proper programming of improvements provides the framework for the necessary technical, administrative, and public support essential for the plan's success. Moreover, it aids in preparing a reasonably balanced fiscal program for all governmental agencies.

The implementation program, presented herein, has been prepared in two priority groupings extending over a period of 15 years. The program periods are Priority I, short-range plan, 1970 through 1975, and Priority II, long-range plan, 1976 through 1985.

The selection of elements of the plan for each priority group was based on the following criteria:

1. Improvements which provide maximum service for present traffic demands have the highest priority.

2. Segments usable on completion without waiting for the total system development should come first.

3. Continuity of routing should be maintained.

4. The financial capabilities of the jurisdiction in which the selected segment is located should be considered.

5. All designated committed improvements were considered built during the first five years (1965-1970) of the design period or will be built during the 1970-1975 period.

Plate V-1, Construction Priorities--Financially Attainable Program, presents the recommended priority groupings for the development of the elements of the proposed major street and highway plan. Listings of each segment of the financially attainable program are presented in Table IV-7, Financially Attainable Program--Major Street Cost Summary, which also indicates the priority group for each particular improvement. First priority projects include those elements of the financially attainable program which are necessary to increase the capacity of the existing system where existing and future traffic needs are high. The short-range program includes plan elements that were committed during the later stages of the study. Such projects include State Route 130, Kirby Avenue between Duncan Road and Mattis Avenue, and others.

SHORT-RANGE PLAN

The proposed improvements for the first five-year period are collectively referred to as the "five-year program" or the "short-range plan." Total expenditures required for the five-year program (1970-1975) will amount to $3,139,000 for the Illinois Division of Highways, $1,989,000 for Champaign County, $2,462,000 for the City of Champaign, $2,194,000 for the City of Urbana, and $1,553,000 for the University of Illinois, or a total of $11,373,000 in the study area. Table V-1, Five-Year Program Cost Summary by Jurisdiction, presents a listing of the routes proposed for improvement and the five-year program cost by jurisdiction.

The right-of-way is recommended to be acquired during the five-year program for Bradley Avenue between Lincoln Avenue and Broadway. Roadway construction of this facility will be in the second priority period. Similarly, the right-of-way should be purchased during the five-year program for Windsor Road between Staley Road and Philo Road. One-half of the proposed cross section is recommended to be built during the five-year program for the section of Windsor Road between Prospect Avenue and Philo Road. The other half of the cross section is to be constructed in the second priority period.

It is recognized that additional improvements to the ones listed in Table V-1 are required in the five-year program. These additional improvements were deleted due to the shortage of funds in various jurisdictions of the study area. The traffic situation could be appreciably relieved if the proposed three new structures across the Illinois Central Railroad at John Street, Park Street, and Washington Street were constructed. None of these structures could be afforded by the City and Township of Champaign in the five-year program. It is recommended that the structure at Park Street be constructed early in the second priority period.(32)

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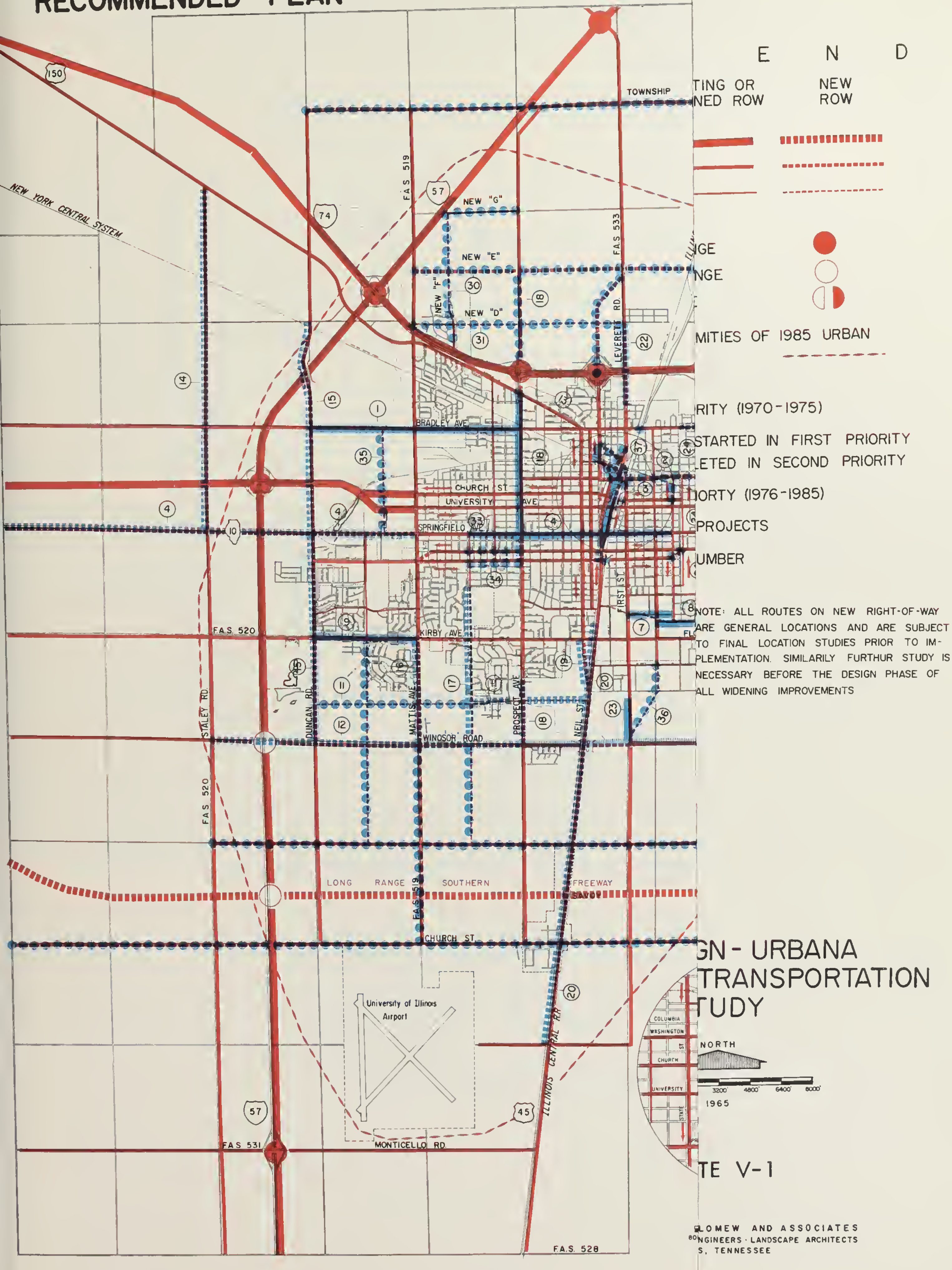
(32) See additional details in Five-Year Program Plans, Harland Bartholomew and Associates, April, 1970.

LONG-RANGE PLAN

The total estimated cost of implementing the facilities in this priority period extending from 1976 to 1985 will approximate $2,530,000 for the Illinois Division of Highways, $2,936,000 for Champaign County, $3,372,000 for the City and Township of Champaign, $3,266,000 for the City and Township of Urbana, and $695,000 for the University of Illinois, or a total of $12,799,000. This cost covers the completion of Windsor Road and Bradley Avenue. Other major improvements include Springfield Avenue (Illinois 10) from the study area western boundary to Mattis Avenue and Neil Street (U.S. 45) from Church Street to north of Birch Street for the Illinois Division of Highways. Major improvements in the County jurisdiction include Windsor Road between First Street and Staley Road, Bradley Avenue between Staley Road and Duncan Road, and Duncan Road between Springfield Avenue and the Hensley-Champaign Township line. Major improvements in the City and Township of Champaign jurisdiction include the Main Street to Park Street connection in the Champaign CBD, Leverett Road, State Street between Kirby Avenue and Neil Street, Duncan Road between Springfield Avenue and Windsor Road, Russell Street between Kirby Avenue and Windsor Road, Prospect Avenue between Litchfield Lane and Windsor Road, and Mattis Avenue between Kirby Avenue and Barberry Drive. Major improvements in the City and Township of Urbana jurisdiction include Goodwin Avenue, Bradley Avenue between Goodwin Avenue and Cunningham Avenue (U.S. 45), Windsor Road between Race Street and Philo Road, Broadway Avenue between Bradley Avenue and University Avenue, Springfield Avenue between Coler Avenue and Water Street, and Florida Avenue between Cottage Grove Avenue and Philo Road. Major improvements in the University of Illinois jurisdiction include Goodwin Avenue between Nevada Street and Pennsylvania Avenue and Windsor Road between First Street and Race Street.

There are some components of the recommended transportation plan which are desirable for construction during the next 15 years but which were omitted due to lack of funds by some jurisdictions. If additional funds become available, these streets can be programmed for development. There are some components of the recommended transportation plan which are desirable for construction during the next 15 years but which were omitted due to lack of funds by some jurisdictions. If additional funds become available, these streets can be programmed for development. Table V-2 presents a detailed cost estimate for additional improvements to the ones in the Financially Attainable Program that are needed to meet the 1985 traffic and land service needs. Tables IV-2 and IV-8 concerning the Recommended Plan include the cost of improvements in Table V-2. In addition to projects listed in Table V-2, other improvements are needed to meet long-range needs and to provide adequate land service to the outlying areas. These later projects are not needed from a traffic service point of view but are necessitated by good planning principles. Improvements in Table V-2 and the long-range and "planning call" improvements are collectively called "deferred projects" and are shown on Plate V-1.

CONSTRUCTION PRIORITES
RECOMMENDED PLAN



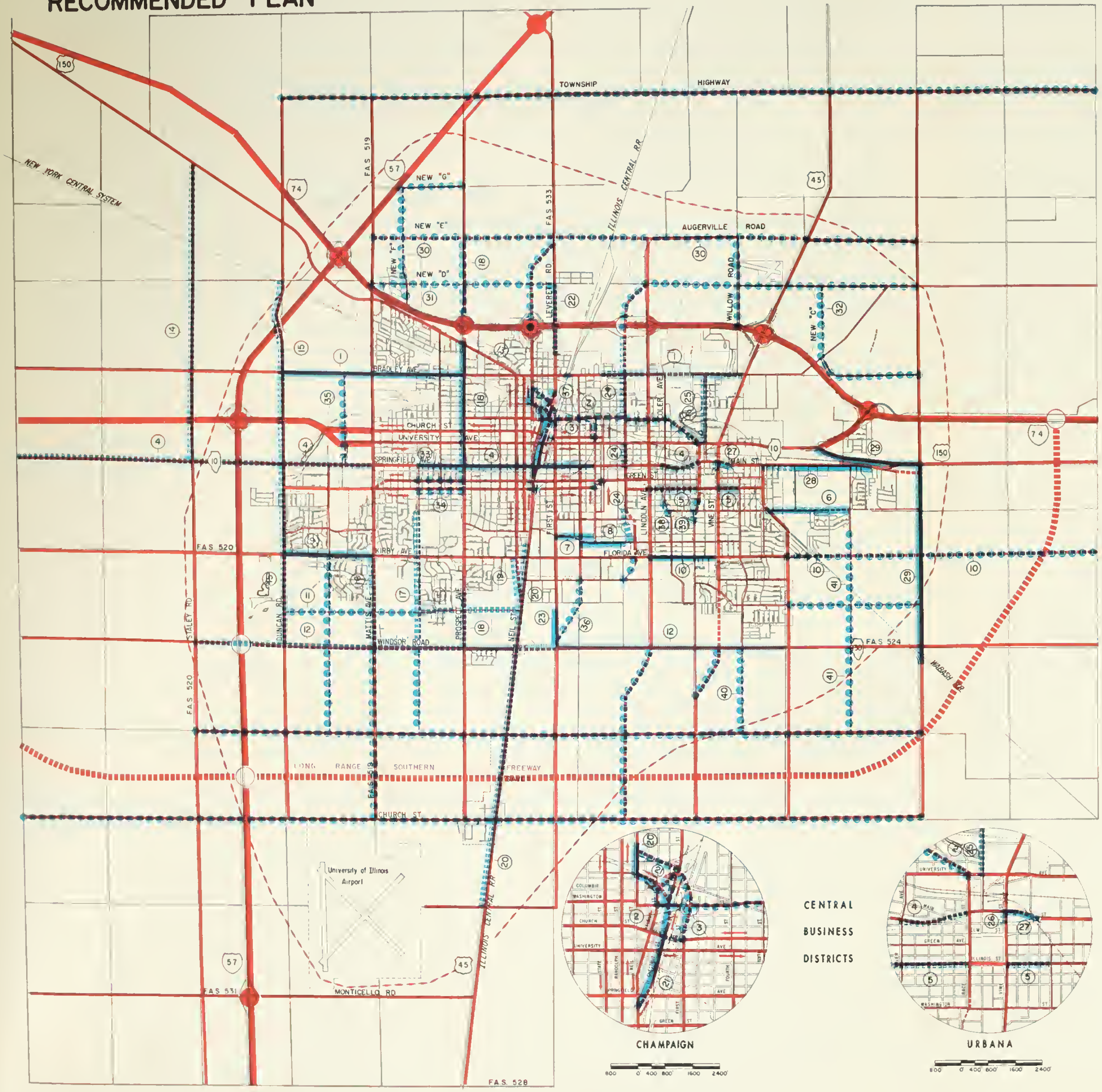
NOTE: ALL ROUTES ON NEW RIGHT-OF-WAY ARE GENERAL LOCATIONS AND ARE SUBJECT TO FINAL LOCATION STUDIES PRIOR TO IMPLEMENTATION. SIMILARILY FURTHUR STUDY IS NECESSARY BEFORE THE DESIGN PHASE OF ALL WIDENING IMPROVEMENTS

GN - URBANA
TRANSPORTATION
TUDY

TE V-1

LOMEW AND ASSOCIATES
NGINEERS · LANDSCAPE ARCHITECTS
S, TENNESSEE

CONSTRUCTION PRIORITES
RECOMMENDED PLAN



L E G E N D

	EXISTING OR WIDENED ROW	NEW ROW
CONTROLLED ACCESS	━	┅
ARTERIAL	━	┅
COLLECTOR	─	┄

EXISTING INTERCHANGE ●

PROPOSED INTERCHANGE ○

SPLIT INTERCHANGE ◐

FORECASTED EXTREMITIES OF 1985 URBAN LAND DEVELOPMENT

FIRST PRIORITY (1970-1975)

PROJECTS STARTED IN FIRST PRIORITY BUT COMPLETED IN SECOND PRIORITY

SECOND PRIORTY (1976-1985)

●●●● DEFERRED PROJECTS

③ PROJECT NUMBER

NOTE ALL ROUTES ON NEW RIGHT-OF-WAY ARE GENERAL LOCATIONS AND ARE SUBJECT TO FINAL LOCATION STUOIES PRIOR TO IMPLEMENTATION SIMILARILY FURTHUR STUOY IS NECESSARY BEFORE THE DESIGN PHASE OF ALL WIDENING IMPROVEMENTS

CHAMPAIGN - URBANA
URBAN AREA TRANSPORTATION
STUDY

NORTH

1600 0 800 1600 3200 4800 6400 8000'

1965

PLATE V-1

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

TABLE V-1

FIVE-YEAR PROGRAM COST SUMMARY BY JURISDICTION

Champaign-Urbana Urban Area Transportation Study

Project Number	Street Section	State	County	Champaign	Urbana	University of Illinois	Total Cost
9	Kirby Avenue between Duncan Road and Mattis Avenue			$ 300,000			$ 300,000
29	State Route 130 from South of Wabash Railroad to I-74 Spur	$1,640,000					1,640,000
28	Main Street from City Limit to 3,960 feet to the west		$ 187,000		$ 113,000		300,000
27	Water Street between Vine Street and Main Street				317,000		317,000
6	Washington Street between Phila Road and Dodson Drive				316,000		316,000
1	Bradley Avenue between Duncan Road and Prospect Avenue		765,000	277,000			1,042,000
1	Bradley Avenue between Lincoln Avenue and Broadway Avenue				187,000		187,000
10	Florida Avenue between Lincoln Avenue and Vine Street				797,000		797,000
23	First Street between Windsor Road and 2,500 feet north of Windsor Road				99,000	99,000	198,000
4	Springfield Avenue Between Russell Street and Sixth Street	652,000					652,000
18	Prospect Avenue between Bloomington Road and Springfield Avenue	847,000					847,000
12	Windsor Road between Prospect Avenue and Phila Road		1,037,000		365,000	640,000	2,042,000
21	Walnut-Chestnut One-Way Couple between Neil Street and Maple Street			1,745,000			1,745,000
2	Washington Street between Walnut Street and Chestnut Street			140,000			140,000
7	Peabody Drive between First Street and Sixth Street					390,000	390,000
8	Pennsylvania Avenue between Fourth Street and Goodwin Avenue					424,000	424,000
	TOTAL COST	$3,139,000	$1,989,000	$2,462,000	$2,194,000	$1,553,000	$11,337,000

NOTE: All cost figures are in 1965 dollars.

See Plate V-1 for project identification.

In order to be fully acceptable, the long-range plan must be capable of properly accommodating the future estimates of traffic by location. The recommended transportation plan properly accommodates the 1985 traffic estimates. The financially attainable program meets the 1985 traffic needs at a relatively lower level of service and provides relatively less land service to the areas expected to develop by 1985 than the recommended plan. The recommended plan and the financially attainable program are "solution" plans, and the resulting cost estimates reflect this fact. If actual growth occurs at a more rapid rate or at a slower rate than was estimated for this study, adjustments will need to be made to the implementation schedule discussed herein with a resulting change in the cost estimates for each time period. Because it is more refined and keyed closer to points in time, the implementation program is more subject to change than is the plan. For example, if an area only grows half as fast as was forecasted, the long-range plan generally should still be valid; but the implementation program would indicate too rapid a schedule and should be adjusted. It is the function of the continuing transportation planning process to detect such changes at an early stage, test the capability of the plan to accommodate the changes, and modify the plan or implementation schedule if necessary. Periodic modification of the stage development program might also be necessary to conform to new schedules for apportionment of federal, state, and local funds. Detailed fiscal studies should also be undertaken as an integral phase of the continuing transportation planning process.

The plans presented herein have been carefully designed to accommodate existing as well as estimated future needs. Reasonable growth and levels of service have been used in developing the plan. The cost to implement the plans has been prepared to provide guidance for local, state, and federal agencies which will be responsible for the construction of these needed facilities to serve residents of and visitors to the Champaign-Urbana area.

PARKING

Chapter II presented the inventory data of existing parking facilities in the Champaign CBD, the University of Illinois area, and the Urbana CBD. Chapter III discussed the forecast of parking needs for the Champaign CBD, the University of Illinois area, and the Urbana CBD.

It is not the purpose of the Champaign-Urbana Urban Area Transportation Study to establish a parking plan but to provide guidance as to the level of need which can be used by either public agencies or private enterprise in providing such facilities. Parking needs are determined from an analysis of parking space demand compared to the available parking supply.

Analyses of parking needs indicated a total 1985 parking deficiency of 637 spaces in the Champaign CBD. The zones of major deficiencies are zones 20, 24, 27, 30, and 35. Each

MAJOR

CHAMPAIGN

Project Number	Street and Section		Existing		1985 ADT[2]	
			Pavement	R.O.W.[1]		
30	New "E" Street					
	Mattis Avenue	New "F"	New	New	3,000	
	New "F"	Prospect Avenue	New	New	3,100	
	Prospect Avenue	Leverett Road	New	New	500	
31	New "D" Street					
	New "F"	City Limits	New	New	8,700	
	City Limits	Prospect Avenue	New	New	8,700	
	Prospect Avenue	Neil Street	New	New	900	
	Neil Street	Leverett Road	New	New	3,500	
1	Bradley Avenue					
	First Street	Fourth Street	44	66	15,400	ailroad
32	New "C"					
	Augerville Road	Brownfield Road	New	New	1,700	
2	Washington Street (Beslin Street–Fairview Avenue)					
	Leverett Road	First Street	46	57	15,700	restricted
	First Street	Fourth Street	27	57	13,700	
	Fourth Street	Sixth Street	27	66	14,200	
	Sixth Street	Wright Street	27	66	12,200	
	Wright Street	Goodwin Avenue	25	66	12,500	
	Goodwin Avenue	Lincoln Avenue	27	63	12,200	
	Lincoln Avenue	Coler Avenue	24	60	11,700	
	Coler Avenue	University Avenue	New	New	10,500	
33	Green Street					
	Mattis Avenue	Russell Street	26	66	14,000	
	Russell Street	McKinley Avenue	27	66	14,800	
	McKinley Avenue	Prospect Avenue	27	66	15,900	
34	John Street					
	Russell Street	Prospect Avenue	27	66	13,100	
	Neil Street	Oak Street	New	New	10,700	entral Railroad.
	Sixth Street	Green Street	New	New	7,200	
10	Florida Avenue					
	Philo Road	Dodson Drive	New	New	4,800	
	Dodson Drive	Myra Station Road	New	New	4,200	
	Myra Station Road	Study Area Boundaries	New	New	600	
11	Devonshire Drive					
	Duncan Road	Holiday Park Drive	New	New	9,100	hould be
	Holiday Park Drive	Mattis Avenue	New	New	3,600	hent.
	Mattis Avenue	Russell Street	New	New	8,600	
12	Windsor Road					
	Windsor Road	Windsor Road	New	New	8,700	l of the Federal led for the oddi- change.
35	Belmont (County Fair Road)					
	Bradley Avenue	Church Street	New	New	4,400	
	Church Street	University Avenue	New	New	6,100	
	University Avenue	Springfield Avenue	New	New	5,500	

TABLE V-2

MAJOR STREET COST ESTIMATE
RECOMMENDED PLAN

CHAMPAIGN - URBANA URBAN AREA TRANSPORTATION STUDY

Project Number	Street and Section		Existing		1985 ADT[2]	Recommended			Length In Feet	Estimated Cost in Thousands of Dollars				Jurisdiction	Remarks
			Pavement	R.O.W.[1]		Section Reference[3]	Pavement	R.O.W.[1]		Roadway	R.O.W.	Structure	Total		
30	New "E" Street														
	Mattis Avenue	New "F"	New	New	3,000	C	24	120	1,600	71	27	-	98	Hensley Township	
	New "F"	Prospect Avenue	New	New	3,100	C	24	120	3,680	167	63	-	230	Hensley Township	
	Prospect Avenue	Leverett Road	New	New	500	C	24	120	5,280	238	86	-	324	Hensley Township	
										TOTAL			652		
31	New "D" Street														
	New "F"	City Limits	New	New	8,700	D	22	80	690	17	6	-	23	Champaign	
	City Limits	Prospect Avenue	New	New	8,700	D	22	80	2,380	58	22	-	80	Champaign	
	Prospect Avenue	Neil Street	New	New	900	D	22	80	3,800	93	40	-	133	Champaign	
	Neil Street	Leverett Road	New	New	3,500	D	22	80	1,480	36	14	-	50	Champaign	
										TOTAL			286		
1	Bradley Avenue														
	First Street	Fourth Street	44	66	15,400	TS-50M	44	66	1,430	-	-	250	250	Champaign	Structure at Illinois Central Railroad
										TOTAL			250		
32	New "C"														
	Augerville Road	Brownfield Road	New	New	1,700	D	22	80	3,960	32	12	-	44	Urbana	
										TOTAL			44		
2	Washington Street (Beslin Street-Fairview Avenue)														
	Leverett Road	First Street	46	57	15,700	TS-30	2@26	94	370	-	-	800	800	Champaign	Structure necessitated by the restricted pavement at railroad.
	First Street	Fourth Street	27	57	13,700	TS-30	2@26	94	1,320	118	44	-	162	Champaign	
	Fourth Street	Sixth Street	27	66	14,200	TS-50M	44	66	900	70	23	-	93	Champaign	
	Sixth Street	Wright Street	27	66	12,200	TS-50M	44	66	420	35	-	-	35	Champaign	
	Wright Street	Goodwin Avenue	25	66	12,500	TS-50M	44	66	1,270	99	-	-	99	Urbana	
	Goodwin Avenue	Lincoln Avenue	27	63	12,200	TS-50M	44	66	1,320	103	-	-	103	Urbana	
	Lincoln Avenue	Coler Avenue	24	60	11,700	TS-50M	44	60	1,060	83	-	-	83	Urbana	
	Coler Avenue	University Avenue	New	New	10,500	TS-50M	44	80	2,220	173	64	-	237	Urbana	
										TOTAL			1,612		
33	Green Street														
	Mattis Avenue	Russell Street	26	66	14,000	OS-32	44	66	3,000	140	-	-	140	Champaign	
	Russell Street	McKinley Avenue	27	66	14,800	OS-32	44	66	1,430	82	-	-	82	Champaign	
	McKinley Avenue	Prospect Avenue	27	66	15,900	OS-32	44	66	1,270	73	-	-	73	Champaign	
										TOTAL			295		
34	John Street														
	Russell Street	Prospect Avenue	27	66	13,100	OS-32	44	66	1,300	77	-	-	77	Champaign	
	Neil Street	Oak Street	New	New	10,700	OS-32	44	66	530	38	78	210	326	Champaign	Includes structure at Illinois Central Railroad.
	Sixth Street	Green Street	New	New	7,200	OS-32	44	66	630	44	100	-	144	University of Ill.	
										TOTAL			547		
10	Florida Avenue														
	Philo Road	Dodson Drive	New	New	4,800	C	24	120	3,800	242	90	-	332	Urbana	
	Dodson Drive	Myra Station Road	New	New	4,200	C	24	120	4,070	258	100	-	358	Urbana	
	Myra Station Road	Study Area Boundaries	New	New	600	C	24	120	10,560	671	249	-	920	Urbana	
										TOTAL			1,610		
11	Devonshire Drive														
	Duncan Road	Holiday Park Drive	New	New	9,100	C-1	36	60	2,640	186	69	-	255	Champaign	Development of this facility should be concurrent with area development.
	Holiday Park Drive	Mattis Avenue	New	New	3,600	C-1	36	60	2,640	186	69	-	255	Champaign	
	Mattis Avenue	Russell Street	New	New	8,600	C-1	36	60	2,640	186	68	-	254	Champaign	
										TOTAL			764		
12	Windsor Road														
	Windsor Road	Windsor Road	New	New	8,700	TS-30	2@26	118	-	-	-	800	800	State	Interchange at I-57. Approval of the Federal Highway Administrator is needed for the addition of the Windsor Road interchange.
										TOTAL			800		
35	Belmont (County Fair Road)														
	Bradley Avenue	Church Street	New	New	4,400	TS-50	30	54	3,330	189	66	-	255	Champaign	
	Church Street	University Avenue	New	New	6,100	TS-50	30	54	740	41	-	-	41	Champaign	
	University Avenue	Springfield Avenue	New	New	5,500	TS-50	30	54	1,220	69	-	-	69	Champaign	
										TOTAL			365		

18	Prospect Avenue					
	New "E" Street	I-74	20	66	11,3	
22	Leverett Road					
	Bradley Avenue	Chestnut-Walnut One-Way Couple	36	66	10,1	
36	Fourth Street					
	St. Mary's Road	First Street	New	New	7,9	
37	Sixth Street					
	Washington Street	Railroad	New	New	5,1	
	Railroad	Church Street	20	66	5,1	
24	Goodwin Avenue					
	Lincoln Avenue	I-74	New	New	1,3	
	I-74	I-74	New	New	2,9	
	Florida Avenue	St. Mary's Road	New	New	4,7	
38	Coler Avenue-Orchard Street Connection					
	Coler Avenue	Orchard Street	New	New	4,3	at Washington
39	Race Street					
	Illinois Street	Washington Street (Urbana)	30	50	4,6	at Washington
40	Anderson Street					
	Windsor Road	AT&T Road	New	New	7,9	
41	Dodson Drive					
	Washington Street (Urbana)	Windsor Road	New	New	4,7	

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[1] R.O.W. indicates right-of-way width in feet.

[2] 1985 ADT refers to the 1985 average 24-hour traffic volume assigned to the recommended plan.

[3] Section reference refers to a typical cross section. See Plate IV-9.

NOTE: See Plate V-1 for project identification.

TABLE V-2 (CONTINUED)

18	Prospect Avenue														
	New "E" Street	I-74	20	66	11,300	TS-50M	44	66	1,580	124	-	-	124	Champaign	
										TOTAL			124		
22	Leverett Road														
	Bradley Avenue	Chestnut-Walnut One-Way Couple	36	66	10,100	TS-50M	36	66	2,370	-	-	395	395	Champaign	Partial interchange
										TOTAL			395		
36	Fourth Street														
	St. Mary's Road	First Street	New	New	7,900	TS-50M	44	80	3,700	297	110	-	407	Urbana	
										TOTAL			407		
37	Sixth Street														
	Washington Street	Railroad	New	New	5,100	OS-32	44	66	320	23	9	-	32	Champaign	
	Railroad	Church Street	20	66	5,100	OS-32	44	66	500	94	-	-	94	Champaign	
										TOTAL			126		
24	Goodwin Avenue														
	Lincoln Avenue	I-74	New	New	1,300	TS-50M	44	80	3,700	289	107	-	396	Urbana	
	I-74	I-74	New	New	2,900	TS-50M	44	80	-	-	-	395	395	State	Half interchange
	Florida Avenue	St. Mary's Road	New	New	4,700	TS-50M	44	80	1,430	112	41	-	153	Urbana	
										TOTAL			944		
38	Coler Avenue-Orchard Street Connection														
	Coler Avenue	Orchard Street	New	New	4,300	TS-50	30	66	790	50	20	-	70	Urbana	New intersection alignment at Washington Street (Urbana)
										TOTAL			70		
39	Race Street														
	Illinois Street	Washington Street (Urbana)	30	50	4,600	TS-50	30	50	1,320	65	35	-	100	Urbana	New intersection alignment at Washington Street (Urbana)
										TOTAL			100		
40	Anderson Street														
	Windsor Road	AT&T Road	New	New	7,900	C-1	30	60	5,280	314	116	-	430	Urbana	
										TOTAL			430		
41	Dodson Drive														
	Washington Street (Urbana)	Windsor Road	New	New	4,700	C-1	30	60	10,560	379	141	-	520	Urbana	
										TOTAL			520		

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[1] R.O.W. indicates right-of-way width in feet.

[2] 1985 ADT refers to the 1985 average 24-hour traffic volume assigned to the recommended plan.

[3] Section reference refers to a typical cross section. See Plate IV-9.

NOTE: See Plate V-1 for project identification.

of these zones had a deficiency of over 150 parking spaces. The deficiency in zones 24 and 30 is nearly offset by the surplus in zones 21, 22, 23, and 31. See Plate II-2, Chapter II, for zone locations.

The Champaign Development Corporation prepared a new plan for the Champaign CBD. This plan has been adopted by the Champaign City Council. It is anticipated that when the Central Business District is developed in accordance with the plan sufficient parking will be provided in the area. The location and capacity of the proposed off-street facilities are indicated on Plate III-4, Chapter III.(33)

The 1985 parking space deficiency for the University of Illinois area amounts to 13,633 spaces. The core of the University area (zones 220, 238, 239, 243, and 244) has serious parking deficiencies (see Plate II-2, Chapter II, for zone locations). The core is a substantially built-up campus area. At the present time, the University does not have a policy of providing for student parking on the campus. The parking demand, if recognized by University policies, will most likely require the use of parking structures where space may be made available for it, require additional parking space on the periphery of the campus area, or require the use of other means such as limiting the use of passenger vehicles in the University area. Since the parking inventory was completed, plans have been made to provide a parking structure (1,000 spaces) in zone 215.

The actual parking needs for the University itself would have to be coordinated with long-range campus planning and anticipated student vehicle ownership controls as well as the availability of funds to provide parking spaces. The level of parking demand obtained as indicated would, however, provide a reasonable estimate of parking needs for the University area within and outside the campus. Plate III-4B, Chapter III, depicts the location of deficient zones and possible locations of needed facilities in the University of Illinois area.(34)

A total of 769 surplus spaces is forecasted for the Urbana CBD. This surplus is the result of the large number of spaces (1,000) available in Lincoln Square. Zones 294, 295, and 299 are forecasted to have deficiencies of 76, 164, and 184 spaces, respectively. (See Plate II-2, Chapter II, for zone locations.) However, these zones are within walking distance of surplus zones. Deficiencies in zones 294 and 295 can be satisfied by the surplus in zone 292, and those in zone 299 can be satisfied by the surplus in zones 301 and 298. When the proposed revitalization of the northern portion of the CBD is undertaken, parking spaces must be provided to meet the needs of the individual land uses in the area as they are developed.

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(33) See additional details in Central Business District Plan, Champaign, Illinois, Champaign Development Corporation: Planning Consultants: Candeub, Fleissig and Associates, March, 1968.

(34) See additional details in Long-Range Parking Plan for the University of Illinois, Harland Bartholomew and Associates, December, 1962.

The financially attainable program and the recommended transportation plan are based on the assumption that all on-street parking be removed from the major street system. Implementation of the financially attainable program will then result in the loss of some curb spaces. It is necessary that curb spaces removed shall be replaced in off-street parking facilities. The Peabody Drive between First Street and Sixth Street and the Pennsylvania Avenue between Fourth Street and Goodwin Avenue improvements committed by the University of Illinois allow for parking on both sides of the streets. However, these proposed improvements provide sufficient capacity to accommodate the projected 1985 traffic volumes.(35)

TRAFFIC ENGINEERING IMPROVEMENTS

The traffic operations improvements for the Champaign-Urbana area generally consist of adjustments in the traffic operation features with the accompanying traffic control devices and techniques. It includes adjustments to or additions of one-way streets, intersectional geometrics, street lighting, traffic signal systems, signs, and pavement markings. A primary consideration is that traffic operations improvements are an integral part of the comprehensive transportation plan and should be looked upon as a system rather than a collection of isolated treatments of individual highway links or spots.

CAPACITY IMPROVEMENTS

The traffic engineering problem locations were pinpointed in the analysis and evaluation of the transportation facilities inventory data. Each problem location, be it intersection or street segment, which was indicated as operating at above capacity was investigated in an attempt to improve the capacity situation.

Street segments whose capacity could be increased through prohibiting parking are indicated on Plate V-2, Traffic Engineering Improvements. The bottleneck intersections as

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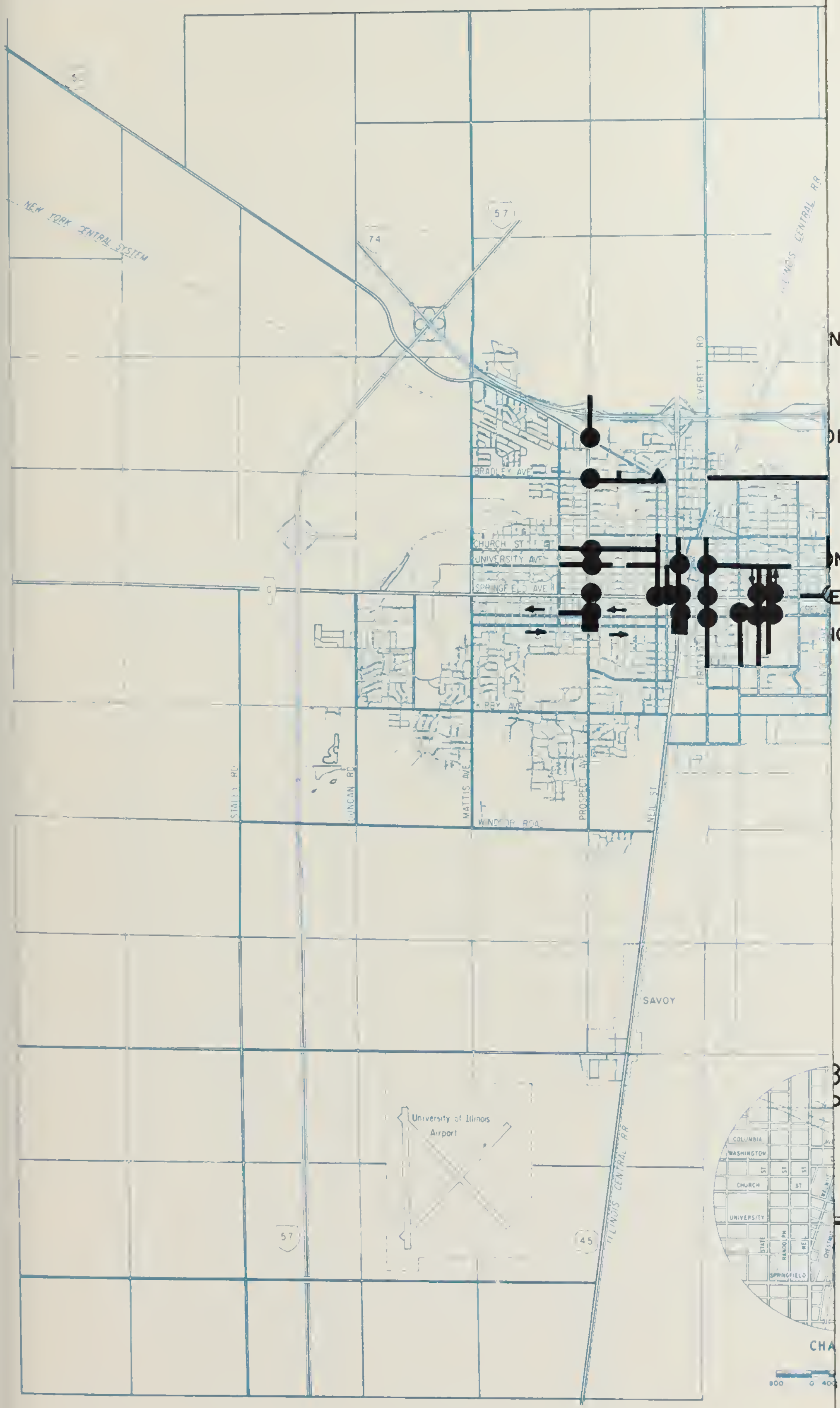
(35) See additional details in Interim Report J, Terminal and Transfer Facilities Inventory and Forecast, Harland Bartholomew and Associates, January, 1969.

TRAFFIC ENGINEERING IMPROVEM



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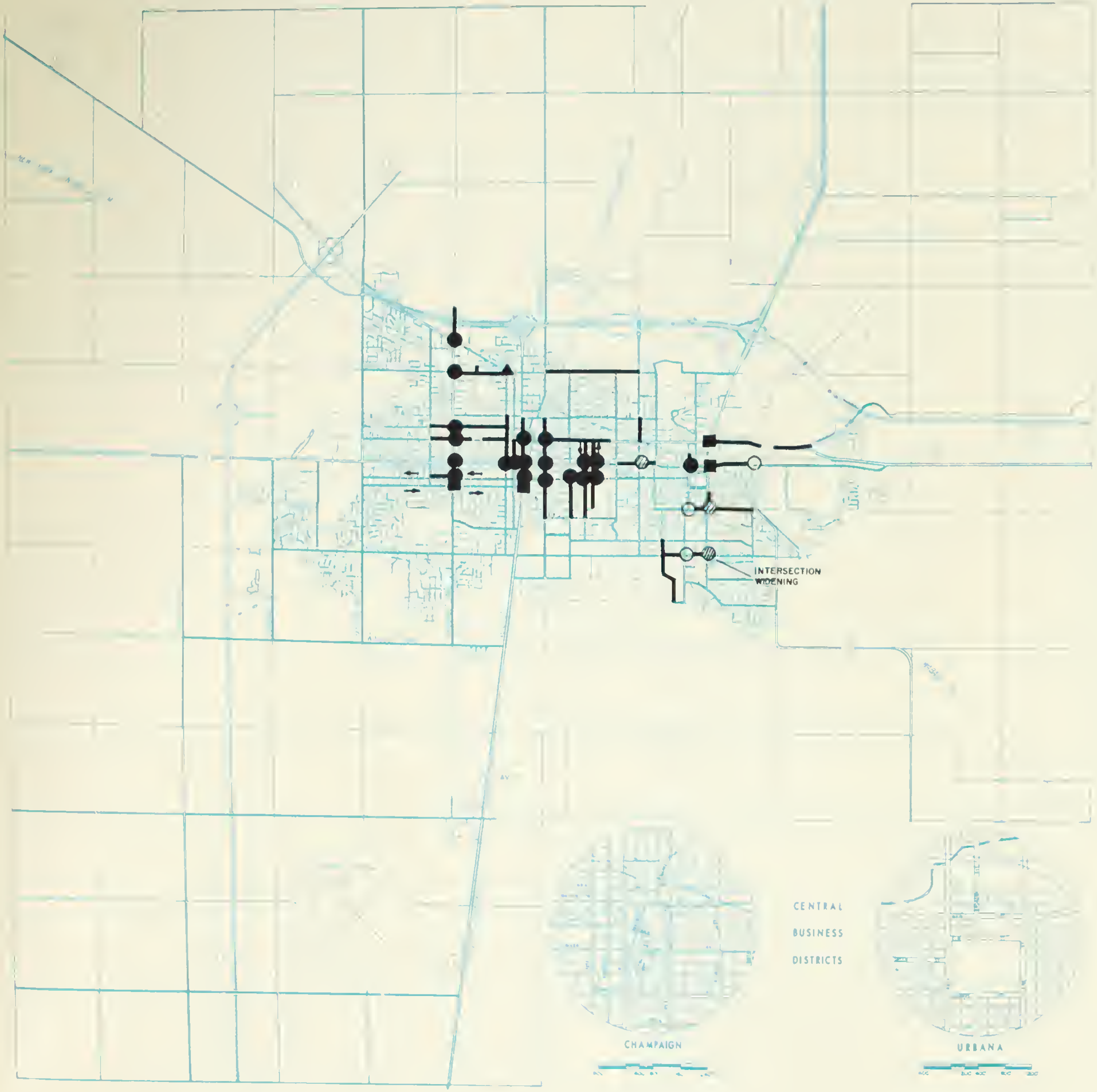
TRAFFIC ENGINEERING IMPROVEMENTS



LEGEND

- ■ SIGNAL INSTALLATION WARRANTED
- ▨ DETAILED SIGNAL INVESTIGATION WARRANTED
- ○ SIGNAL INSTALLATION NOT WARRANTED
- ● SIGNAL TIMING RECOMMENDED
- — PARKING PROHIBITION RECOMMENDED
- ▲ CHANNELIZATION RECOMMENDED
- → ONE-WAY OPERATION RECOMMENDED

CHAMPAIGN-URBANA
URBAN AREA TRANSPORTATION
STUDY

NORTH

PLATE V-2

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS CIVIL ENGINEERS LANDSCAPE ARCHITECTS
MEMPHIS TENNESSEE

well as the problem intersections pinpointed by the link analysis were investigated. The optimum green timing for each of the signalized intersections is shown in Table V-3, Recommended Signal Timing.

Intersection capacity analyses indicated the necessity of widening Prospect Avenue along its length from Interstate 74 south through its intersection with John Street. As this improvement is neither low nor medium in cost, it has been included in the first five-year program in the transportation plan. Four other over-capacity links are located in the Champaign Central Business District (Neil between Main and University, Neil between University and Walnut, University between Walnut and Chestnut, and Washington between Market and First). The transportation plan includes new connections and routing to solve these problems.

The intersection of Florida Avenue and Vine Street is operating at over capacity. Widening of this intersection is recommended as an immediate traffic engineering improvement.

ONE-WAY STREET IMPROVEMENTS

One-way streets provide immediate relief and are relatively inexpensive means of providing additional capacity and increased safety. Plate V-2 indicates the recommended one-way street system in the Champaign-Urbana area.

The one-way couple of Green Street and John Street should be implemented at this time from Mattis Avenue to Neil Street. This improvement can be implemented and coordinated in conjunction with the transportation plan recommendation that the one-way couple later be established for a longer distance eastward. The high cost of a railroad grade separation immediately east of Neil Street prohibits the extension of the one-way couple east of Neil. A necessary action to make the one-way system of Green Street and John Street successful will be the installation of a traffic signal at Neil Street and John Street and Prospect and John Street (see Table V-4, Non-Signalized Locations Investigated). The existing signals on Green at Randolph Street and State Street should break the flow on those facilities such that signals would not be needed immediately at the intersection of these streets with John Street for proper operation of the one-way couple.

The extension of the one-way Church-University couple to Chestnut Street is not recommeded at this time since it would require the changes of direction on other streets such as Chester and possibly others in the central area. The net result of total changes does not appear to cause an improvement in total traffic movement and service. It would, however, cause circuitous routing of westbound traffic on University destined to City Hall and the immediate vicinity.

TABLE V-3

RECOMMENDED SIGNAL TIMING

Champaign-Urbana Urban Area Transportation Study

North-South Street	G/C	East-West Street	G/C
Prospect	.25	U.S. 150	.65
Prospect	.64	Bradley	.26
Prospect	.64	Church	.26
Prospect	.57	University	.33
Prospect	.54	Springfield	.36
Prospect	.54	Green	.36
State	.26	Springfield	.64
Randolph	.25	Springfield	.65
Neil	.31	University	.59
Neil	.44	Springfield	.46
Neil	.46	Green	.44
First	.33	University	.57
First	.37	Springfield	.53
First	.33	Green	.57
Fourth	.32	Green	.58
Sixth	.25	Springfield	.65
Sixth	.25	Green	.65
Wright	.26	Springfield	.65
Wright	.37	Green	.53
Race	.60	Main	.30

TABLE V-4

NON-SIGNALIZED LOCATIONS INVESTIGATED

Champaign-Urbana Urban Area Transportation Study

Intersection	Signal Warranted Volume Basis	Detailed Investigation Required	Signal Not Warranted Volume Basis
Prospect and John	X		
Neil and John	X		
Lincoln and Springfield		X	
Race and Washington			X
Race and Florida			X
Vine and University	X		
Vine and Main	X		
Vine and Washington		X	
Cottage Grove and Main			X
Vine and Florida		X	

The Wright-Sixth Streets one-way couple is recommended as indicated in the recommended transportation plan and the financially attainable program and should be initially extended to University Avenue from its present termination on Springfield. This would necessitate the inclusion of Sixth Street in the State Jurisdictional System and the route signing adjusted to reflect the change.

NEW SIGNAL LOCATIONS

Probable new signal installations were investigated to see if signalization is warranted. The locations investigated included the intersections of John and Neil and John and Prospect, which are needed for desirable operation of the one-way couple, and the non-signalized intersections which were over capacity even after the implementation of the recommended improvements. This investigation was conducted on the basis of volume warrants prescribed in the "Manual On Uniform Traffic Control Devices For Streets And Highways." Table V-4 includes these locations and indicates the status for the need of a signal at each location. Plate V-2 presents the same results in graphic form.

CHANNELIZATION IMPROVEMENTS

Channelization is recommended at the intersection of Bradley Avenue and Bloomington Road. This is a very large intersection due to the angle at which Bloomington Road intersects Bradley Avenue. With State Street running north and south, the intersection becomes five-legged. This intersection has recently been redesigned and channelized. For the existing traffic volumes, the design just implemented is satisfactory. However, signalization when required at this intersection must be three phase. At that time, a capacity analysis may indicate that a redesign is necessary to reduce the intersection to four legs and thus two-phase signal operation.

ACCIDENTS

Analyses of existing accident experience in the study area indicated that three locations had a relatively high accident occurrence when compared with the rest of the area. These are the outer connection ramp in the southeast quadrant of the I-74/I-57 interchange, the intersection of Chestnut Street with University Avenue in Champaign, and the link on Neil Street between Washington Street and Columbia.

Improvements in accident rates may result from changes in the traffic circulation patterns recommended in the five-year program. This includes a relief to the Neil Street link by providing the Walnut-Chestnut connection to Neil north of Columbia Street and by the introduction of a one-way movement on University Avenue, which would relieve the University-Chestnut intersection. Accidents at the I-74/I-57 ramp occurred immediately after the opening of this facility to traffic. The accidents were the result of vehicles traveling at speeds higher than the ramp design speeds, causing an overturning of vehicles. However, since the facility has been completed, opened, and properly signed, the accident occurrence was virtually eliminated. There were no accidents reported in 1968 at this location and only two reported in 1967.

COST OF TRAFFIC ENGINEERING IMPROVEMENTS

A summary of traffic engineering improvement costs is shown in Table V-5, Cost Summary. The indicated total cost is $179,980. This includes costs for capacity improvement measures (parking restriction signs, retiming of signals, widening Florida Avenue through Vine Street), use of one-way couples, and new signal installations.

Plate V-2 summarizes the recommendations of the traffic engineering improvements analysis. It shows recommended parking restrictions, the intersections where optimum green timing has been recommended, the intersections requiring channelization, the one-way couple, and the results of the non-signalized locations investigated for signalization.

TABLE V-5

COST SUMMARY

Champaign-Urbana Urban Area Transportation Study

Type Of Improvement	Cost	Jurisdiction
Capacity Improvements		
Parking Restriction Signs	$ 10,080	Champaign-Urbana
Widening Florida Through Vine	101,900	Urbana
Green-John One-Way Couple	28,000	Champaign
New Signal Locations	40,000	Urbana
TOTAL	$179,980	

The traffic operations improvements recommended in this study and in accordance with the scope of this study can only provide minimum relief in the areas of traffic congestion. It is recommended that an overall traffic operations study be initiated for the Champaign-Urbana study area in order to obtain maximum efficiency, safety, and utilization of the present street system. The Champaign-Urbana area could avail itself of "TOPICS" (Traffic Operations Program to Increase Capacity and Safety) recently announced by the U.S. Department of Transportation, Bureau of Public Roads. Maximum benefits may be derived if all jurisdictions in the Champaign-Urbana transportation study area institute a joint TOPICS study which would relate traffic engineering features across jurisdictional lines to serve the same traffic most efficiently.(36)

CONTINUING PLANNING

The continuing planning program is designed to permit maintaining up-to-date information and an up-to-date plan for the guidance of transportation improvements as well as policy decisions related to transportation. There should be an adopted transportation plan at any given point in time, and the continuing planning program permits periodic evaluation of the plan toward the end of determining necessary modifications. Changes made to the plan should be based upon analyses at least as detailed as those involved in the development of the recommended plan.

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(36) See additional details in Interim Report L, Traffic Engineering Improvements, Harland Bartholomew and Associates, December, 1969.

The Federal Aid Highway Act of 1962 brought into law the requirement that after July 1, 1965, contiguous urban areas of 50,000 population or more must be involved in a continuing comprehensive transportation planning process in order to be eligible for Federal aid for constructing highway facilities. An obvious and immediate objective of establishing a continuing comprehensive transportation planning process is, of course, to become and remain eligible for Federal highway funds.

The continuing comprehensive transportation planning process will be a challenge to the community. The manner in which this challenge can be met will best be understood by defining the continuing comprehensive transportation planning process in terms of functional objectives.

MONITOR AREA DEVELOPMENT

This is the functional objective whereby the community will perform the bookkeeping necessary to be aware of the various elements of the community and their interplay, growth, and change. Essentially, this will be the development and maintenance of a body of organized data relating to various elements of the community generally referred to as a data bank. This activity should be carried out continuously and on a day-to-day basis regardless of transportation planning activity related to any other functional objective.

Activity related to the data bank will involve receipt, review, and preparation of new data for inclusion in the data bank. This activity will also require a judgment decision regarding the need to review the development of the area in greater detail. A constant review of the schedule for implementing the transportation plan will be necessary in order to determine when action is required. The proposal by interested groups to test the inclusion of a certain project or facility has to be reviewed and the necessary documentation for testing prepared.

REVIEW AREA DEVELOPMENT

This functional objective will require. transportation planning activity to detect development in the community different from the development which had been expected in forecasts. Essentially, this activity will be a comparison of the community as it develops to the community as it has been forecasted. Activity related to this functional objective will occur periodically and at such times as sufficient amounts of new data have been introduced to the data bank so as to make any difference found in the comparison of sufficient magnitude to be meaningful.

Activities related to this functional objective will be: first, to summarize data; second, to review the aggregate development of the community; and third, to review the community development patterns. Comparison will then be made to determine whether the actual development is different from the expected development.

EVALUATE CHANGE

At such times that changes are noted in the community which were not expected, it will be necessary to evaluate those changes to determine: first, whether or not the changes affect the models; second, if the changes do not affect the models, what effect they have on the trip forecast; and third, if the forecast is unaffected, does the change affect the plan or the program?

REVISE MODELS

The trip forecast models are based on observations of the travel habits and travel-related characteristics of the community. Should TRAVEL HABITS OR TRAVEL-RELATED CHARACTERISTICS change, the forecast models will need to be revised or updated. Activity related to this functional objective will occur only at such times as the models no longer provide an adequate representation of community travel.

REVISE FORECASTS

When trends in community development have been detected or when the forecast models have been revised or updated, it will be necessary to revise the travel-related socio-economic data, land use areas and distribution, and trip forecasts. Activity related to this functional objective will be the application of the traffic forecast models to the revised forecasts of travel-related planning data. This will, of course, provide new estimates of future travel.

EVALUATE FORECASTS

When travel forecasts have been reviewed, it will be necessary to evaluate the forecasts to determine whether or not the transportation plan or program needs revision. Activity related to this functional objective will involve assignment of future trips to the future network, evaluation of the future system, and a determination as to the adequacy of the plan and program to serve future needs.

REVISE PLAN OR PROGRAM

An update or revision of the plan will be required whenever significant changes in land use distribution are detected and/or whenever travel needs are no longer adequately served. Activity related to this objective will require the following: First, the effect on the plan must be determined; and the plan must be revised if necessary. Second, revision of the program will require that new priorities and costs be established; and, third, whether or not immediate action is required.

IMPLEMENT PLAN

Activity related to this functional objective will be required to coordinate the activities of the agencies involved in the transportation planning process to prepare for public hearings and to prepare publicity programs. Activity will also be required to maintain the schedule for implementation of the program and recommend action to the policy-making body when action is required.

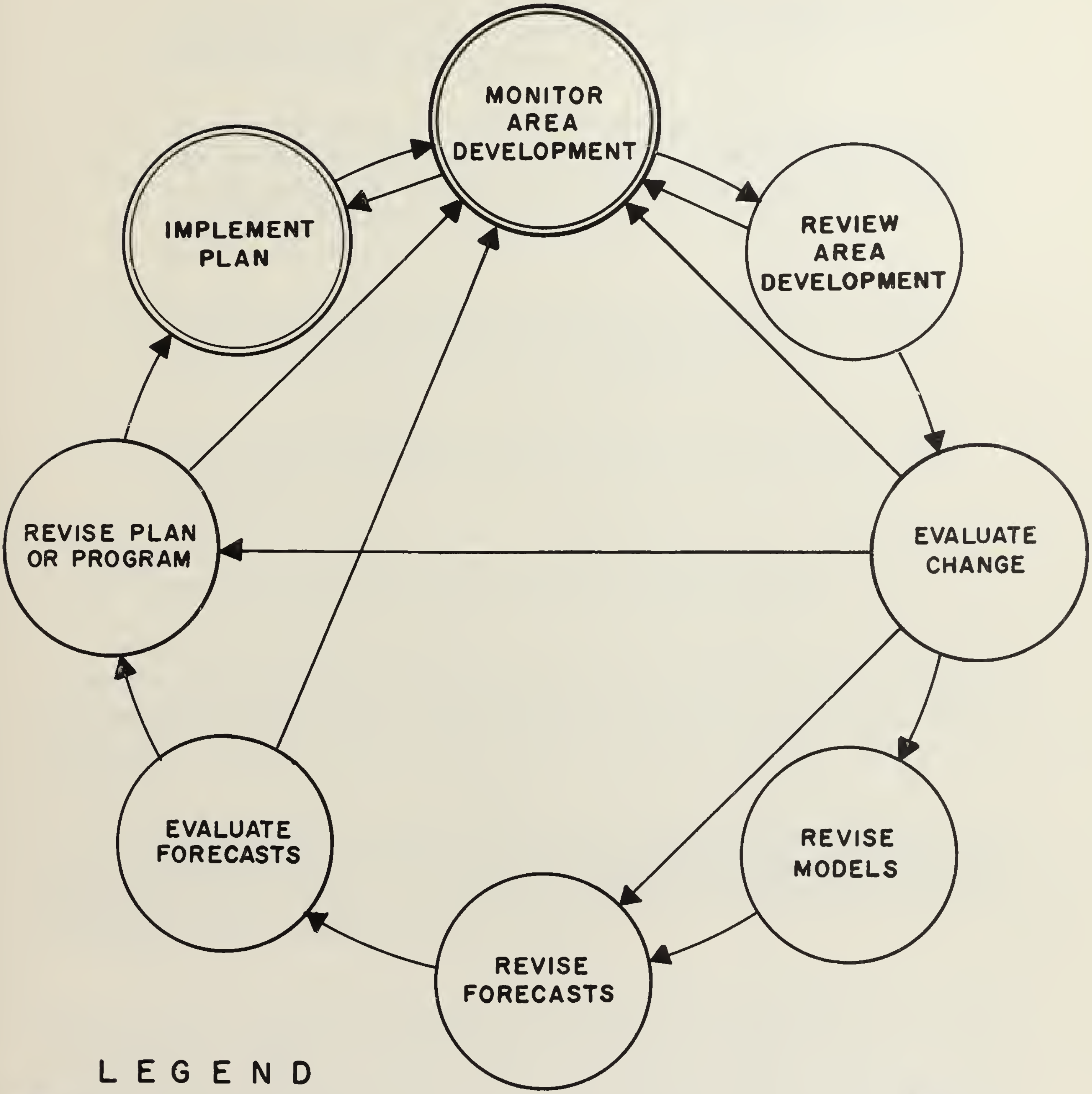
ACTIVITY SEQUENCE

Plate V-3, Functional Objectives, graphically presents the sequence of activity necessary to accomplish the functional objectives of the continuing comprehensive planning process. Transfer of activity from one functional objective to another will generally require a decision; however, activity related to monitoring area development and implementing the plan should be carried out at all times.

The normal transfer of activity will occur between monitoring area development and implementing the plan and will be motivated by the plan schedule and by plan progress. At such times that significant amounts of new or revised data have been received in the data bank, activity transfer will occur from monitoring the plan to reviewing area development.

Activity related to reviewing area development will determine whether or not the area is growing and developing as forecasted. If forecasts have been accurate, then activity will transfer back to monitoring the plan; however, when unexpected development is encountered, activity will immediately transfer to evaluating the change. In evaluating change, one of four determinations will be made as follows:

FUNCTIONAL OBJECTIVES



LEGEND

◎ CONTINUING ACTIVITY

○ ACTIVITY CONDUCTED AS REQUIRED

→ COURSE OF ACTION

CONTINUING TRANSPORTATION PLANNING PROCESS

PLATE V-3

1. The change is not significant in that it will not affect the models, the forecasts, the plan or the program; and, therefore, activity must be transferred back to monitoring the plan.

2. Change is significant in that it does affect the plan or program but does not affect the models or the forecasts; and, therefore, activity will be transferred to revising the plan or program. This would occur when a minor spot revision of the plan is found to be desirable or when some change in community development requires a change in the program.

3. The change is significant and is a change in the travel-related characteristics of the community but not in the community travel habits; and, therefore, activity would be transferred to revising the forecasts.

4. The change is significant and has been found to be a change in the travel habits of the community; therefore, activity would be transferred to revising the models.

When the travel habits of the community have changed, it will be necessary to revise the models after which activity should be transferred to revising forecasts.

Activity related to revising the forecasts will occur whenever the models have been changed or when travel-related planning data have been changed. This activity is essentially the application of the models to the travel-related planning data in order to forecast future trips. After forecasts have been revised, activity should be transferred to evaluating the forecasts.

In evaluating forecasts, a determination will be made as to whether or not the plan will serve forecasted travel desires. If the plan is found to be adequate, activity will transfer to monitoring the plan; however, in the case that the plan is not adequate, activity will immediately transfer to revising the plan or program.

Minor revision of the plan or program which will not require reassignment of traffic will be necessary whenever it is desirable to make localized or spot revisions in the plan or when program changes are necessary. Major plan revision and traffic assignment will be required whenever the plan no longer serves forecasted needs. After the plan or program is revised, activity will be transferred either to implementing the plan or monitoring the plan.

Activity related to the functional objective of implementing the plan will be a scheduled activity or will be a result from a revision of the plan or program.

UPDATING THE PLAN

As the community grows and develops, new growth and development trends will be detected which were not originally anticipated in the initial forecast of the community growth. These differences will provide the basis for new forecasts of community growth and development which in turn might require an updating of the transportation plan or program. While an updating of the plan will be accomplished through activities related to the functional objectives of the continuing transportation planning process, the following outline provides the updating procedure:

1. Minor checks of area developments should be made each year to be sure that the plan is still adequate and responsive to the needs of the Champaign-Urbana area.

2. Minor updates of the plan probably will be required every two to three years in order to "tailor" the plan to actual development. This requires more detailed checks of the adequacy of the plan than are suggested for the annual program.

3. A major update of the plan should be made every five years in order to extend and expand the plan as is necessary. This normally would require major checks of area development and supplements of the base data necessary for planning. Major reviews and plan reevaluations should be undertaken sooner than every five years if the need arises.

4. Periodic checks will be required to determine if and when a new plan is required because of a change in concept for the Champaign-Urbana area. Such changes in concept would include major changes in land use development plans, major modifications to long-range goals and objectives of the area, or changes in transportation concept.

ORGANIZATIONAL STRUCTURE AND AGENCY RESPONSIBILITY

In order for the continuing comprehensive planning process to function efficiently, each public agency involved in the process will need to collect and maintain information in a form acceptable for the transportation planning process. Agreements may already exist among the agencies concerning data collection. Each public agency will be engaged in various activities required to satisfy the previously discussed functional objectives of the continuing planning process.

Transportation systems know no political boundaries. All parties must demonstrate their willingness to accept responsibilities including cooperation, decisiveness, and active participation with both manpower and money. However, the responsibility for community planning to attain desired goals is primarily local.

The overall administration and policy-making responsibilities should continue to be vested in the committees established for this study. These committees are the Policy Committee, the Citizens Advisory Committee, and the Technical Committee.

Basic responsibility for the collection of necessary data, the various analyses required during the continuing planning phase, and the development of the recommendations for plan and/or program revision will rest with the engineering and planning staffs of the various agencies within the Champaign-Urbana area. Each of these agencies will be responsible for some portion of the collection of data needed to perform the various update analyses, the performance of the required analyses on the specific data, and the preparation of detailed recommendations based upon the analyses performed.

Plate V-4, Generalized Work Activity and Agency Responsibility, graphically presents the general responsibility for collection of the required data as well as performance of the various work activities contained in each of the previously discussed evaluation programs. The overall coordination needed to finalize and submit the annual report on the continuing transportation planning activities should be the responsibility of the Illinois Division of Highways, as indicated on Plate V-4.

The data collection for the Champaign-Urbana Urban Area Transportation Study now under way was gathered generally in 1965. By the time the study is concluded, approximately five years would have passed. This would suggest that the state and local agencies, as required, immediately embark on a quinquennial type update of data and reanalysis of the transportation plan. As a minimum transportation plan was developed herein, the quinquennial update would take on added importance. The total system would require analysis, review, and update so as to insure adequacy for a 1990-1995 long-range plan.(37)

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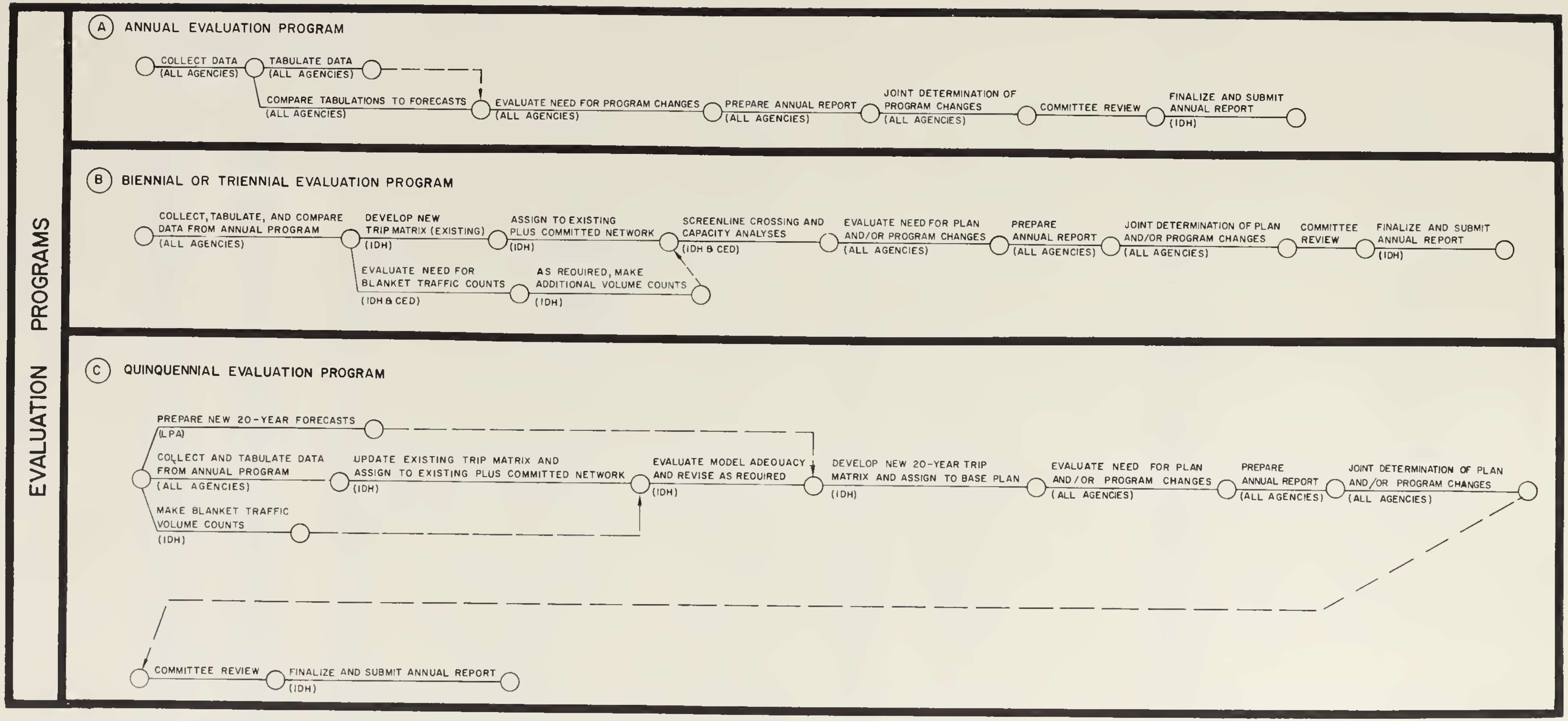
(37) See additional details in Continuing Planning Process, Harland Bartholomew and Associates, March, 1969.

GENERALIZED WORK ACTIVITY AND AGENCY RESPONSIBILITY

CHAMPAIGN-URBANA URBAN AREA TRANSPORTATION STUDY

REQUIRED DATA	AGENCY RESPONSIBILITY
1. TRANSPORTATION FACILITIES (INCLUDE MASS TRANSIT) 2 TERMINAL AND TRANSFER FACILITIES 3 TRAVEL PATTERNS	ILLINOIS DIVISION OF HIGHWAYS (IDH)
4 TRAFFIC CONTROL FEATURES	ILLINOIS DIVISION OF HIGHWAYS, CHAMPAIGN COUNTY ENGINEERING DEPARTMENT AND CITY ENGINEERING DEPARTMENTS
5 ECONOMIC FACTORS 6. POPULATION 7 LAND USE 8 ZONING ORDINANCES, SUBDIVISION REGULATIONS, BUILDING CODES, ETC. 9 FINANCIAL RESOURCES 10 SOCIAL AND COMMUNITY VALUE FACTORS	LOCAL PLANNING AGENCIES (LPA)


EVALUATION PROGRAMS
Ⓐ ANNUAL EVALUATION PROGRAM
COLLECT DATA (ALL AGENCIES)
TABULATE DATA (ALL AGENCIES)
COMPARE TABULATIONS TO FORECASTS (ALL AGENCIES)
EVALUATE NEED FOR PROGRAM CHANGES (ALL AGENCIES)
PREPARE ANNUAL REPORT (ALL AGENCIES)
JOINT DETERMINATION OF PROGRAM CHANGES (ALL AGENCIES)
COMMITTEE REVIEW
FINALIZE AND SUBMIT ANNUAL REPORT (IDH)
Ⓑ BIENNIAL OR TRIENNIAL EVALUATION PROGRAM
COLLECT, TABULATE, AND COMPARE DATA FROM ANNUAL PROGRAM (ALL AGENCIES)
DEVELOP NEW TRIP MATRIX (EXISTING) (IDH)
ASSIGN TO EXISTING PLUS COMMITTED NETWORK (IDH)
SCREENLINE CROSSING AND CAPACITY ANALYSES (IDH & CED)
EVALUATE NEED FOR PLAN AND/OR PROGRAM CHANGES (ALL AGENCIES)
PREPARE ANNUAL REPORT (ALL AGENCIES)
JOINT DETERMINATION OF PLAN AND/OR PROGRAM CHANGES (ALL AGENCIES)
COMMITTEE REVIEW
FINALIZE AND SUBMIT ANNUAL REPORT (IDH)
EVALUATE NEED FOR BLANKET TRAFFIC COUNTS (IDH & CED)
AS REQUIRED, MAKE ADDITIONAL VOLUME COUNTS (IDH)
Ⓒ QUINQUENNIAL EVALUATION PROGRAM
PREPARE NEW 20-YEAR FORECASTS (LPA)
COLLECT AND TABULATE DATA FROM ANNUAL PROGRAM (ALL AGENCIES)
MAKE BLANKET TRAFFIC VOLUME COUNTS (IDH)
UPDATE EXISTING TRIP MATRIX AND ASSIGN TO EXISTING PLUS COMMITTED NETWORK (IDH)
EVALUATE MODEL ADEQUACY AND REVISE AS REQUIRED (IDH)
DEVELOP NEW 20-YEAR TRIP MATRIX AND ASSIGN TO BASE PLAN (IDH)
EVALUATE NEED FOR PLAN AND/OR PROGRAM CHANGES (ALL AGENCIES)
PREPARE ANNUAL REPORT (ALL AGENCIES)
JOINT DETERMINATION OF PLAN AND/OR PROGRAM CHANGES (ALL AGENCIES)
COMMITTEE REVIEW
FINALIZE AND SUBMIT ANNUAL REPORT (IDH)

LEGEND

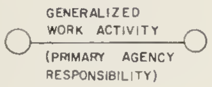


PLATE V-4

HARLAND BARTHOLOMEW AND ASSOCIATES
CITY PLANNERS, CIVIL ENGINEERS, LANDSCAPE ARCHITECTS
MEMPHIS, TENNESSEE

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